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UK METEOROLOGICAL OFFICE
GLOBAL DATA MONITORING REPORT

APRIL 2000

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREPs, ACARs, AMDARs and ASDARs) received per day throughout the month at Bracknell and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREPs, ACARs, AMDARs and ASDARs). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.
N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed ($m\ s^{-1}$).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 $m\ s^{-1}$ (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias| ≥ 4 hPa (pressure),
≥ 5 $m\ s^{-1}$ (wind speed),
≥ 30 degrees (direction).

2.SD ≥ 6 hPa (pressure),
≥ 80 degrees (direction).

3.PGE ≥ 25

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
DGAF	ALL	P	SUR	40	0	0	1.1	-4.7	4.8
ELMQ	ALL	P	SUR	28	0	0	0.8	-4.6	4.7
ELTE6	ALL	P	SUR	50	0	0	0.8	-4.4	4.5
ELVI2	ALL	P	SUR	71	2	3	3.5	-4.9	6.1
ELVJ9	ALL	P	SUR	70	0	0	2.5	-4.4	5.0
ELWR3	ALL	P	SUR	77	8	10	5.0	-4.4	6.6
KSBG	ALL	P	SUR	43	0	0	2.0	-4.7	5.1
LAFQ5	ALL	P	SUR	32	0	0	0.9	-6.1	6.1
MXAR9	ALL	P	SUR	26	0	0	1.3	4.1	4.3
NKJU	ALL	P	SUR	37	0	0	1.3	-4.5	4.7
PDAH	ALL	P	SUR	54	0	0	1.8	-4.2	4.6
P3YR5	ALL	P	SUR	45	2	4	7.5	-2.9	8.0
P3YS5	ALL	P	SUR	64	0	0	1.1	4.6	4.7
UCJL	ALL	P	SUR	27	0	0	1.4	5.9	6.0
UCTK	ALL	P	SUR	70	8	11	6.3	-4.8	7.9
UDUK	ALL	P	SUR	73	0	0	2.6	4.1	4.8
UFNO	ALL	P	SUR	28	0	0	1.3	8.5	8.6
UFXA	ALL	P	SUR	32	0	0	1.4	7.0	7.1
VCJM	ALL	P	SUR	29	29	100			
VCRQ	ALL	P	SUR	33	27	82	3.8	2.4	4.5
VCRT	ALL	P	SUR	27	0	0	3.0	-5.5	6.3
VDFP	ALL	P	SUR	21	20	95	0.0	-9.7	9.7
VTST	ALL	P	SUR	24	0	0	1.0	4.9	5.0
WCN3586	ALL	P	SUR	38	0	0	1.8	-6.4	6.7
WDZB	ALL	P	SUR	20	0	0	2.4	-5.3	5.9
WSK2703	ALL	P	SUR	21	0	0	1.0	-4.3	4.4
WU8842	ALL	P	SUR	21	0	0	2.5	5.5	6.0
1BBXXUAS	ALL	P	SUR	27	0	0	2.0	9.4	9.6
3FXT6	ALL	P	SUR	44	0	0	1.4	5.0	5.2
45132	ALL	P	SUR	292	3	1	5.2	5.1	7.3
48102	ALL	P	SUR	147	145	99	5.2	1.6	5.4
52045	ALL	P	SUR	65	65	100			
52046	ALL	P	SUR	75	49	65	0.5	-14.5	14.5
62138	ALL	P	SUR	57	0	0	0.9	-6.0	6.1
62405	ALL	P	SUR	21	6	29	4.2	-5.6	7.0
62414	ALL	P	SUR	59	11	19	9.1	-1.9	9.3
WIND SPEED									
C6NI3	ALL	SPEED	SUR	31	0	0	4.2	9.2	10.1
C6NI7	ALL	SPEED	SUR	27	0	0	2.9	5.1	5.9
DGCDFD	ALL	SPEED	SUR	58	0	0	4.7	8.2	9.5
DJQR	ALL	SPEED	SUR	39	0	0	7.6	7.9	11.0
ELWC6	ALL	SPEED	SUR	29	0	0	6.0	8.0	10.0
ELWU8	ALL	SPEED	SUR	21	0	0	6.6	8.1	10.4
LAQT2	ALL	SPEED	SUR	60	0	0	2.7	6.9	7.4
LAVX4	ALL	SPEED	SUR	20	0	0	3.8	5.1	6.4
P3WQ5	ALL	SPEED	SUR	24	0	0	4.5	6.7	8.1
VRUH8	ALL	SPEED	SUR	27	0	0	8.2	10.9	13.7
WCN3586	ALL	SPEED	SUR	32	0	0	4.0	5.4	6.7
YJYY2	ALL	SPEED	SUR	32	0	0	5.2	5.5	7.5
3FIQ7	ALL	SPEED	SUR	47	0	0	6.7	7.7	10.2
3FSL4	ALL	SPEED	SUR	48	0	0	2.6	5.8	6.4
62108	ALL	SPEED	SUR	550	0	0	3.5	-5.9	6.9
WIND DIRECTION									
ELED8	ALL	DIRN.	SUR	23	0	0	88.3	-0.2	88.3
13008	ALL	DIRN.	SUR	53	0	0	9.6	59.0	59.8

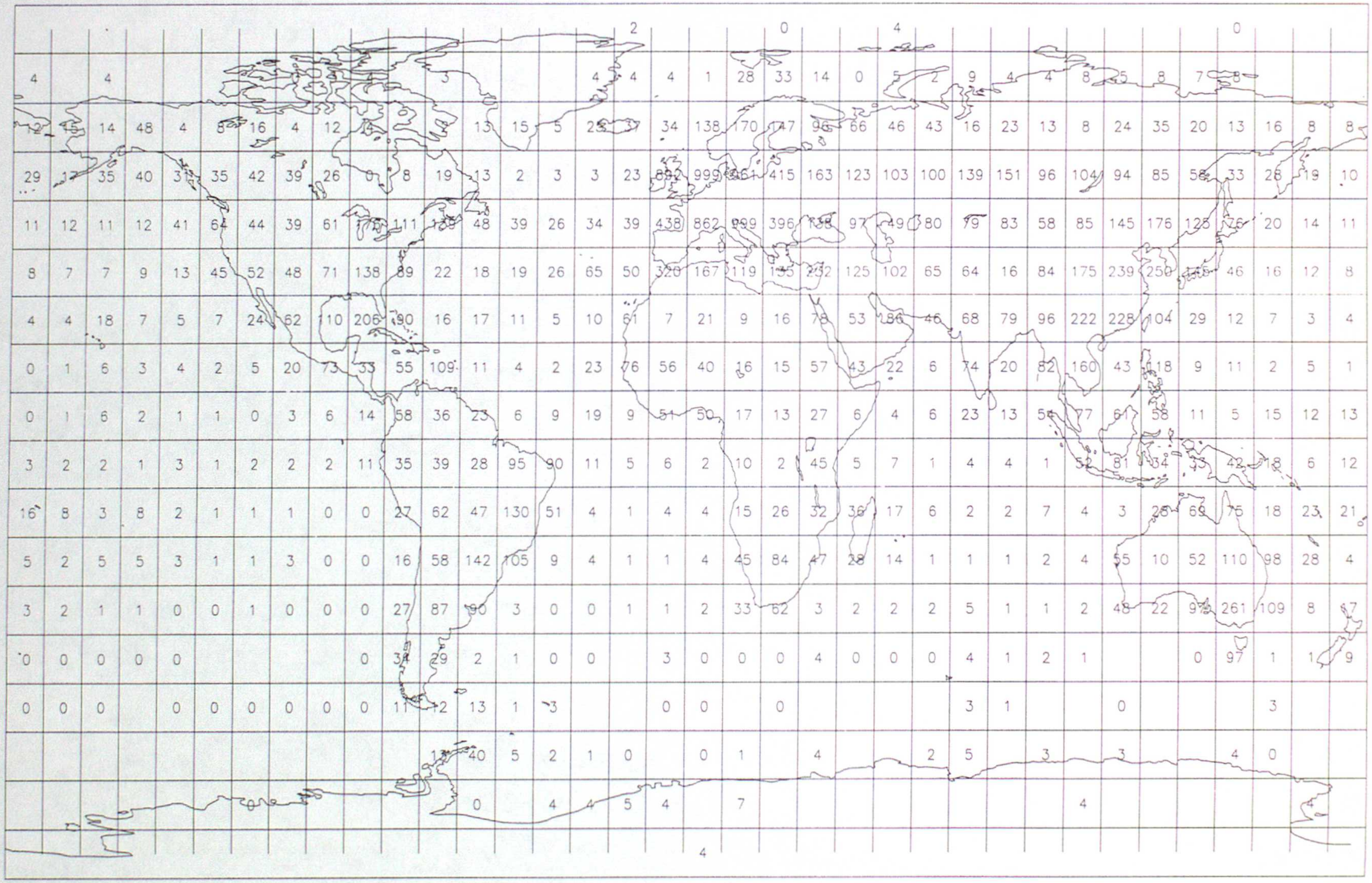
AVAILABILITY - SHIP/SYNOP - APRIL 2000

FIGURE 1

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 21935



																2				0			4									0			
4		4							4		3				4	4	4	1	28	33	14	0	5	2	9	4	4	8	5	8	7	8			
12	15	14	48	4	8	16	4	12	14		2	13	15	5	25	37	34	138	170	147	96	66	46	43	16	23	13	8	24	35	20	13	16	8	8
29	17	35	40	31	35	42	39	26	0	8	19	13	2	3	3	23	892	999	961	415	163	123	103	100	139	151	96	104	94	85	58	33	28	19	10
11	12	11	12	41	64	44	39	61	170	111	139	48	39	26	34	39	438	862	999	396	138	97	49	80	79	83	58	85	145	176	125	76	20	14	11
8	7	7	9	13	45	52	48	71	138	89	22	18	19	26	65	50	320	167	119	135	232	125	102	65	64	16	84	175	239	250	155	46	16	12	8
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0	0	0		0	0	0	0	0	0	11	12	13	1	3			0	0		0					3	1			0				3		
											13	40	5	2	1	0		0	1		4			2	5		3		3			4	0		
												0		4	4	5	4		7									4						4	
																		4																	

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from each unique identifier for drifting buoys.
Standard of comparison	:Background field from UKMO global model.
Position	:Average latitude and longitude for period.
Observation times	:00, 06, 12, 18 UTC
Elements monitored	:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees).

Parameters monitored

	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa :25 m s^{-1}	(pressure) (vector wind)	
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.|bias|	≥ 4 hPa ≥ 5 m s^{-1} ≥ 30 degrees	(pressure), (wind speed), (direction).
	2.SD	≥ 6 hPa ≥ 80 degrees	(pressure), (direction).
	3.PGE	≥ 25.	

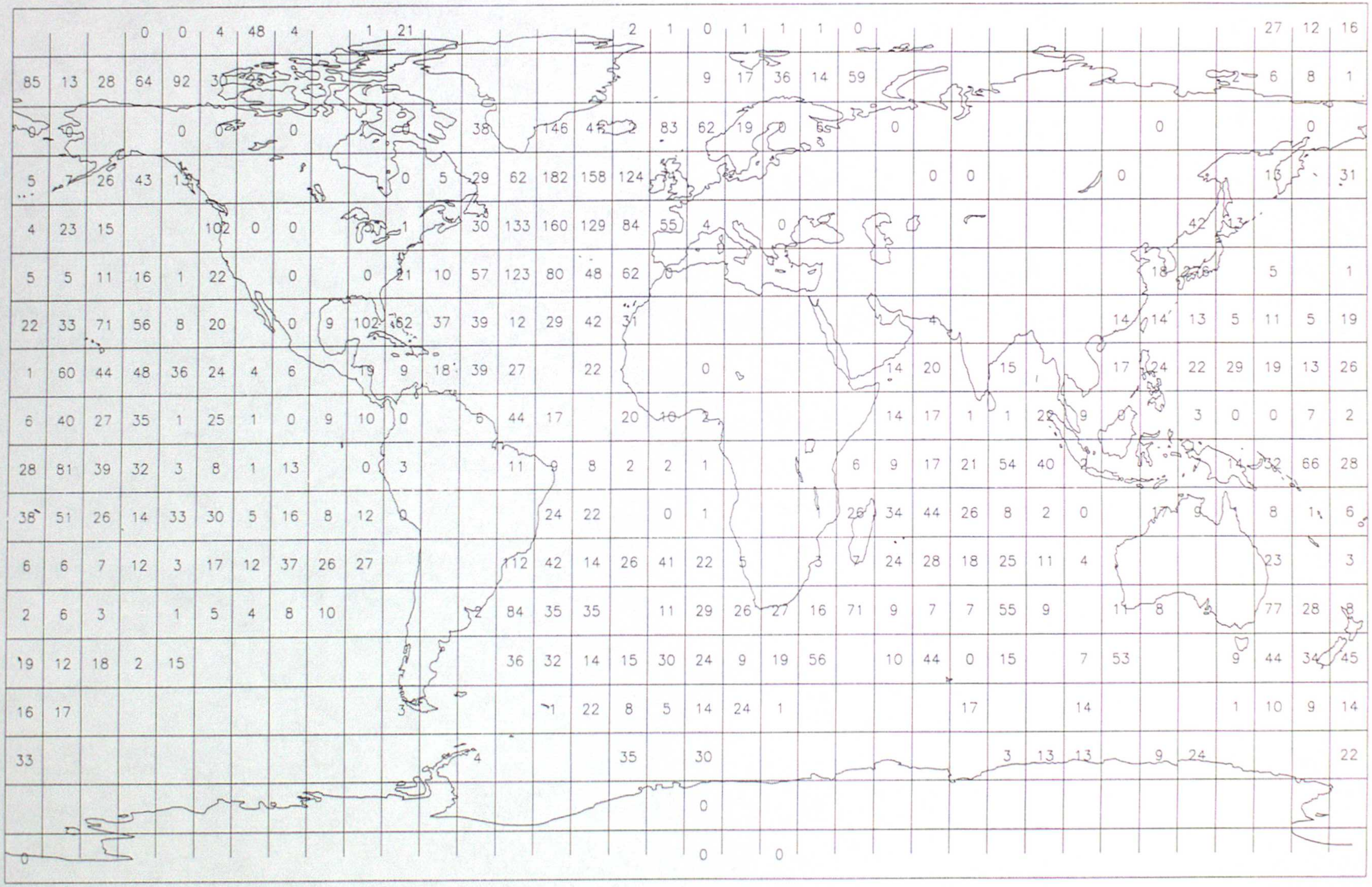
N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

MEAN SEA LEVEL PRESSURE

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
16936	-25.6	81.6	ALL	P	SUR	72	0	0	2.2	-7.7	8.0
17519	-22.2	96.1	ALL	P	SUR	22	21	95	0.0	-14.9	14.9
25565	42.5	-86.4	ALL	P	SUR	134	134	100			
31949	-35.9	-40.7	ALL	P	SUR	1241	173	14	4.7	6.2	7.7
31953	-20.8	-40.7	ALL	P	SUR	645	8	1	2.9	6.4	7.0
31960	-30.1	-38.4	ALL	P	SUR	204	204	100			
33904	-43.2	-3.0	ALL	P	SUR	294	1	0	2.8	4.9	5.7
33944	-43.0	-17.5	ALL	P	SUR	104	8	8	3.2	6.0	6.8
46517	51.5	155.6	ALL	P	SUR	81	31	38	6.3	0.9	6.3
46681	35.0	-76.3	ALL	P	SUR	79	50	63	10.9	-2.2	11.1
48575	76.9	-165.1	ALL	P	SUR	378	21	6	6.7	-0.8	6.8
52815	-10.4	-179.4	ALL	P	SUR	167	124	74	5.6	3.5	6.6
56810	43.6	1.4	ALL	P	SUR	66	66	100			
65603	62.3	-26.1	ALL	P	SUR	31	6	19	3.1	5.4	6.2

AVAILABILITY – DRIFTER – APRIL 2000
MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 7977

FIGURE 2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4 23 15 102 0 0 1 30 133 160 129 84 55 4 0 42 13
5 5 11 16 1 22 0 0 21 10 57 123 80 48 62 0 18 5 1
22 33 71 56 8 20 0 9 102 62 37 39 12 29 42 31 4 14 14 13 5 11 5 19
1 60 44 48 36 24 4 6 19 9 18 39 27 22 0 14 20 15 17 24 22 29 19 13 26
6 40 27 35 1 25 1 0 9 10 0 6 44 17 20 10 2 14 17 1 1 22 9 0 3 0 0 7 2
28 81 39 32 3 8 1 13 0 3 11 9 8 2 2 1 6 9 17 21 54 40 2 14 32 66 28
38 51 26 14 33 30 5 16 8 12 0 24 22 0 1 26 34 44 26 8 2 0 17 9 8 1 6
6 6 7 12 3 17 12 37 26 27 112 42 14 26 41 22 5 3 7 24 28 18 25 11 4 23 3
2 6 3 1 5 4 8 10 2 84 35 35 11 29 26 27 16 71 9 7 7 55 9 11 8 77 28 8
19 12 18 2 15 36 32 14 15 30 24 9 19 56 10 44 0 15 7 53 9 44 34 45
16 17 3 1 22 8 5 14 24 1 17 14 1 10 9 14
33 4 35 30 3 13 13 9 24 22
0
0 0 0

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60445	36.2N	5.4E	1081	S8	102	0	0	1	1.3	5.0	5.2
60468	35.6N	6.2E	1052	S8	96	96	100	0			
60511	35.3N	1.4E	1127	S8	105	90	86	0	0.5	14.3	14.3
60535	34.7N	3.3E	1144	S8	78	1	1	0	0.7	-5.9	5.9
60670	24.6N	9.5E	1054	S8	96	1	1	0	0.7	10.1	10.1
62795	12.7N	34.1E	445	S	92	1	1	2	1.5	-4.0	4.3
62805	11.8N	34.4E	474	MS	93	1	1	8	2.4	-4.3	4.9
63602	3.1N	30.9E	1204	S	29	28	97	0	0.0	1.9	1.9
68030	18.5S	25.6E	1071	8	34	0	0	0	0.8	4.3	4.4
68038	20.5S	26.0E	903	8	35	0	0	0	1.0	4.1	4.2
68106	23.6S	15.1E	407	S	78	25	32	0	1.0	0.3	1.0
68338	26.9S	24.6E	1234	S8	48	46	96	0	0.1	0.5	0.5
68396	26.5S	31.3E	641	S8	49	1	2	0	0.8	4.5	4.6
68481	27.4S	31.6E	312	S8	89	24	27	66	5.6	2.9	6.3

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30320	56.9N	105.7E	669	MS	96	53	55	0	1.3	0.2	1.3
30967	49.9N	115.8E	623	MS	84	1	1	0	1.6	-4.7	5.0
40701	39.3N	44.4E	1470	MS	81	0	0	1	1.1	7.2	7.3
40738	36.8N	54.5E	155	MS	79	36	46	0	0.9	13.7	13.7
40741	36.6N	61.2E	235	MS	87	0	0	0	1.2	-5.1	5.2
40743	36.2N	57.7E	941	MS	105	0	0	0	1.0	-5.5	5.6
40762	35.3N	59.2E	1333	MS	105	8	8	0	1.0	-13.2	13.2
40763	35.2N	58.5E	1060	MS	82	0	0	0	0.9	-6.0	6.1
40783	32.4N	49.7E	1972	MS	78	0	0	0	1.1	-5.8	5.9
40789	33.8N	55.1E	921	MS	68	1	1	1	2.0	7.6	7.9
40812	32.0N	49.3E	372	MS	83	2	2	2	1.1	4.0	4.1
40836	30.8N	51.7E	1880	MS	67	0	0	0	0.9	7.3	7.4
40859	29.0N	53.7E	1383	MS	82	2	2	2	0.8	8.5	8.5
41254	23.1N	57.7E	1755	S8	79	79	100	0			
41396	16.0N	48.9E	700	MS	46	1	2	2	0.7	6.7	6.7
41466	13.7N	44.1E	1402	8	36	0	0	0	0.5	-5.6	5.6
41535	34.2N	73.3E	1308	8	44	0	0	0	1.0	-5.0	5.1
51495	43.5N	91.6E	874	M	119	0	0	3	1.7	7.7	7.9
52955	35.6N	100.8E	3201	S	119	4	3	0	0.7	13.5	13.5
53588	39.0N	113.5E	2898	S	120	120	100	0			
56287	30.0N	103.0E	629	M	120	0	0	1	1.3	4.2	4.4
56444	28.5N	98.9E	3488	S	119	67	56	29	0.7	14.1	14.1
56462	29.0N	101.5E	2994	S	120	0	0	0	1.4	9.1	9.2
57816	26.6N	106.7E	1074	MS	120	11	9	0	0.7	-13.9	13.9

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	MS	46	0	0	0	0.9	-7.1	7.2
82326	3.8S	62.1W	48	MS	89	0	0	0	1.7	4.0	4.3
82704	7.6S	72.7W	170	MS	84	0	0	0	1.3	-4.0	4.2
83214	10.3S	54.9W	285	MS	82	0	0	0	1.7	-6.9	7.1
83235	12.4S	46.4W	604	MS	85	0	0	1	1.2	6.5	6.6
83319	14.7S	52.4W	315	MS	86	0	0	0	1.1	-4.8	4.9
83332	14.1S	46.4W	826	MS	87	11	13	0	0.9	13.2	13.2
83408	14.3S	43.8W	447	MS	73	1	1	0	0.9	10.1	10.1
83423	16.7S	49.3W	741	MS	87	0	0	0	0.7	-4.7	4.8
83488	17.8S	42.9W	1097	MS	88	87	99	0	0.0	11.9	11.9
83531	18.6S	46.5W	940	MS	80	0	0	0	1.1	-6.5	6.6
83587	19.9S	43.9W	850	MS	89	0	0	1	1.0	-6.6	6.7
83704	22.3S	53.9W	369	MS	87	2	2	2	1.0	-9.7	9.8
83773	23.1S	48.9W	793	MS	57	57	100	0			
83836	25.5S	50.6W	837	MS	89	0	0	1	1.2	-4.8	4.9

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
83953	30.9S	55.5W	231	MS	89	0	0	0	0.9	-10.9	10.9
84377	3.8S	73.3W	125	MS	87	0	0	1	1.5	4.2	4.5
84401	5.2S	80.6W	49	MS	90	0	0	0	1.0	4.1	4.2
84425	5.9S	76.1W	179	MS	37	0	0	0	1.3	5.4	5.6
84455	6.5S	76.4W	281	MS	66	0	0	2	1.5	5.4	5.6
84472	7.1S	78.5W	2620	S	43	0	0	2	1.0	-5.0	5.1
84474	7.2S	76.7W	350	S	40	1	3	3	1.5	9.7	9.8
84542	9.4S	77.6W	2750	S	35	1	3	0	0.9	5.3	5.4
84686	13.6S	72.0W	3248	S	89	0	0	0	0.8	-4.5	4.6
84688	13.7S	73.4W	3444	S	34	0	0	0	0.7	-12.2	12.2
84782	18.1S	70.3W	468	MS	90	0	0	0	1.2	7.8	7.9
85140	14.3S	67.4W	140	MS	57	1	2	39	1.8	4.4	4.8
85230	17.6S	69.6W	4054	S	21	1	5	5	2.3	4.6	5.1
85264	18.5S	64.1W	1998	S	54	54	100	0			
85312	19.8S	63.9W	992	S	42	0	0	0	1.4	-9.4	9.5
85406	18.3S	70.3W	55	M	116	0	0	0	1.0	4.6	4.7
85432	22.5S	68.9W	2320	S8	80	0	0	0	0.6	5.7	5.7
85836	43.6S	71.8W	277	M	36	0	0	0	2.1	4.8	5.2

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71506	66.9N	136.3W	600	MS	119	119	100	58			
72340	34.8N	92.3W	165	S	119	1	1	58	5.2	6.1	8.0
76118	30.4N	109.7W	1040	MS	23	0	0	0	0.5	-11.9	11.9
76632	20.1N	98.7W	2417	MS	30	1	3	0	0.7	-4.6	4.7
76658	19.2N	103.7W	494	MS	45	0	0	0	0.7	7.2	7.2
76750	18.5N	88.3W	9	MS	106	0	0	19	3.7	-6.5	7.5
76773	17.8N	97.8W	1680	MS	29	1	3	0	0.7	8.3	8.3
76775	17.1N	96.7W	1550	MS	81	0	0	1	0.8	4.6	4.7
76845	16.7N	92.6W	2276	MS	99	99	100	0			
78229	23.1N	81.3W	3	MS	39	0	0	0	0.8	-5.3	5.4

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
91163	21.9N	159.6W	7	8	347	347	100	0			
92010	6.1S	145.4E	1587	M	51	0	0	0	0.8	10.1	10.1
95611	34.6S	118.5E	107	MS	113	3	3	4	2.3	9.7	10.0
95909	36.5S	148.3E	1957	MS	120	120	100	0			
96751	6.7S	106.9E	920	S8	72	6	8	1	1.0	-4.1	4.2
96755	6.6S	106.9E	171	M	37	14	38	0	0.5	1.0	1.1
96801	7.3S	108.3E	335	S	46	18	39	0	0.6	2.3	2.4

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01245	62.8N	9.7E	671	MS	90	1	1	56	0.8	7.4	7.4
10557	50.5N	11.1E	845	S8	360	360	100	0			
10954	47.8N	10.9E	540	S8	160	160	100	0			
12140	54.4N	18.7E	2	MS	116	0	0	0	0.7	7.7	7.7
13269	44.3N	19.9E	176	MS	116	0	0	1	1.0	7.2	7.3
14554	44.9N	18.4E	140	S	41	1	2	5	1.0	-13.1	13.1
14650	43.8N	18.0E	967	S	40	0	0	0	1.2	-7.7	7.8
17042	41.4N	41.4E	33	M	120	0	0	4	2.1	6.6	6.9
17092	39.8N	39.5E	1218	S8	120	0	0	0	1.0	7.4	7.5
17203	38.9N	40.5E	1177	S8	120	0	0	0	1.0	5.0	5.1

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89208	90.0S	0.0W	2835	M	39	24	62	0	0.3	2.6	2.6
89264	71.4S	68.9W	780	S	255	0	0	0	1.7	6.9	7.1
89266	72.2S	60.3W	91	S	250	124	50	0	3.1	-1.7	3.5
89272	75.0S	70.8W	1395	S	238	238	100	0			
89327	73.2S	127.1W	30	S	251	251	100	0			
89612	66.3S	110.8E	390	S	227	159	70	0	1.4	-1.2	1.8
89744	74.0S	43.0E	3353	S	250	0	0	0	0.8	7.6	7.6
89769	78.5S	168.4E	50	S	369	369	100	0			
89805	74.1S	109.8E	3096	S	224	58	26	0	2.1	2.3	3.1
89847	67.6S	146.0E	30	S	284	0	0	0	1.7	-8.1	8.3

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	65	0	48	2.0	0.8	66	0	47	0	5.3	1.6
AAH	854	0	36	1.5	0.3	848	0	37	0	7.9	0.8
AAL	6541	0	16	1.5	0.1	6536	0	17	0	7.9	1.0
AAR	1734	1	7	1.8	-0.4	1723	0	8	0	9.2	0.5
ACA	2019	0	4	1.7	0.0	2029	0	4	0	6.8	0.7
ACI	70	3	57	1.9	0.0	71	0	56	0	11.3	1.7
AEA	556	1	4	1.9	0.5	544	0	5	0	8.5	0.6
AEL	830	0	8	1.6	-0.6	825	0	9	0	7.7	0.7
AEY	296	0	2	2.0	0.8	297	0	3	0	7.7	0.6
AFL	551	1	5	1.7	0.1	549	1	5	0	8.0	0.4
AFR	2032	1	7	1.6	-0.1	2062	0	7	0	8.5	0.5
AIH	279	1	4	1.7	-0.1	275	0	3	0	8.3	1.8
AJM	207	0	7	1.8	-0.3	202	0	5	0	6.7	0.7
AMM	159	1	10	1.9	0.1	155	0	10	0	8.2	-0.2
AMT	702	0	66	2.4	1.7	711	0	41	0	7.2	0.6
AMX	293	2	5	2.0	0.4	291	1	5	0	10.1	1.0
ANA	1511	0	11	1.7	0.0	1511	0	12	0	8.6	0.6
ANG	34	0	12	0.7	0.2	33	0	9	0	4.2	1.4
ANZ	4989	1	39	1.6	0.2	4965	0	40	0	8.0	0.9
AOM	1180	1	8	1.6	0.7	1173	0	9	0	7.6	0.6
ARG	53	0	19	2.8	1.0	52	2	23	0	9.3	2.7
AUA	22	0	5	2.1	0.4	22	0	5	0	6.7	0.5
AVA	592	1	5	1.7	0.4	595	0	4	0	7.8	0.9
AVN	120	0	44	1.7	0.3	118	0	44	0	7.8	0.0
AXF	71	3	37	1.0	0.5	69	0	35	0	7.5	2.6
AZA	799	1	7	2.0	0.4	806	0	8	0	9.1	1.0
BAF	36	0	0	1.5	-0.5	36	0	3	0	9.3	0.0
BAL	350	0	9	1.6	-0.1	348	0	9	0	7.8	1.3
BAW	1804	0	9	1.9	0.0	1790	0	9	0	7.2	1.0
BBB	67	1	4	1.9	0.0	69	0	7	0	11.3	0.1
BLX	45	2	7	2.0	0.1	46	0	7	0	9.7	-1.3
BWA	317	1	3	1.8	1.0	318	0	5	0	9.3	0.7
CAL	575	1	7	1.8	0.1	569	0	8	0	9.7	0.8
CCA	286	2	100	2.6	0.5	324	1	100	0	13.8	0.3
CDN	2092	0	8	1.7	-0.2	2085	0	10	0	9.2	0.5
CES	393	0	6	1.8	0.4	408	0	100	0	10.3	0.6
CFC	38	0	11	1.6	0.4	39	0	21	0	17.2	5.1
CFG	1482	0	4	1.8	-0.9	1475	0	4	0	8.0	0.7
CGB	22	0	0	1.2	0.4	22	0	5	0	9.2	-1.1
CKS	422	0	36	1.1	0.1	423	0	38	0	8.2	1.2
CLX	424	0	8	1.7	-0.4	425	0	9	0	7.5	0.4
CMI	290	1	4	1.6	0.5	295	0	2	0	8.6	0.5
CMM	441	1	23	1.8	-0.2	437	0	24	0	9.7	1.3
COA	1559	1	23	1.6	0.1	1541	0	24	0	9.6	1.2
CPA	55	0	4	1.5	0.4	54	0	6	0	6.5	1.2
CRL	1059	1	7	1.8	0.8	1064	0	7	0	8.3	0.9
CSN	153	1	8	1.7	0.5	153	1	10	0	8.5	1.2
CTB	208	0	5	1.5	-0.2	207	1	7	0	8.8	0.8
CUB	301	1	5	2.4	1.6	301	0	7	0	9.9	0.8
DAL	4076	0	31	1.6	0.1	4120	0	31	0	7.5	0.7
DBY	655	0	2	1.6	-0.4	653	0	4	0	8.0	0.7
DCS	84	0	1	2.0	-0.4	87	0	3	0	7.4	1.6
DLH	2072	0	3	1.6	-0.1	2062	0	4	0	6.8	0.7
ECH	26	4	4	2.1	0.7	25	0	0	0	6.1	0.5
EEZ	240	2	100	4.3	3.4	233	0	10	0	8.9	0.9
EIA	324	0	37	1.5	0.5	325	0	39	0	8.8	0.8
ELY	115	2	5	1.5	0.0	113	1	6	0	11.0	0.4
EVA	1385	0	5	1.7	-0.2	1414	0	5	0	8.8	0.4
EWW	59	0	2	1.8	0.3	61	0	2	0	8.6	2.1

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FDX	1637	1	14	1.6	0.5	1635	0	14	0	7.9	1.0
FIN	330	0	4	1.6	0.2	319	0	4	0	8.4	1.2
FJI	949	2	46	1.9	0.6	928	0	45	0	8.8	1.0
FOM	579	2	38	1.4	0.3	573	0	37	0	6.8	0.1
FWQ	28	0	50	3.3	0.8	28	0	46	0	4.8	0.1
GAF	65	2	2	1.9	-0.8	66	2	9	0	10.5	0.0
GCO	74	0	22	1.7	0.3	76	0	24	0	12.2	5.0
GHA	48	0	2	1.9	0.2	48	0	6	0	12.0	0.7
GRL	88	0	2	1.6	-0.1	87	0	3	0	6.8	-0.1
GTI	254	0	6	1.7	-0.5	264	0	7	0	8.9	-0.1
HAL	4156	0	35	1.6	0.5	4101	0	36	0	9.6	1.3
HLF	104	0	4	1.7	-0.3	98	0	3	0	8.3	1.3
HRH	163	1	67	1.1	0.2	162	0	67	0	8.0	0.9
IBE	2882	1	7	1.8	0.5	2850	0	8	0	9.2	0.8
ICE	1312	0	2	1.4	-0.1	1285	0	1	0	6.1	1.1
IWD	269	0	5	1.5	-0.4	265	0	7	0	9.3	1.4
JAA	40	10	13	2.7	1.8	40	0	10	0	10.5	1.2
JAL	6385	0	6	1.8	0.1	6365	0	6	0	9.2	0.9
JAZ	669	0	4	1.8	1.2	664	0	4	0	8.3	0.3
JKK	363	1	9	1.7	-0.2	337	1	10	0	9.6	1.0
JMC	173	0	8	2.1	1.4	167	0	7	0	6.8	0.8
KAL	3433	0	8	1.9	-0.3	3416	0	10	0	9.8	0.8
KLM	2849	0	14	1.6	0.2	2845	0	15	0	7.9	0.8
LAN	78	1	13	2.5	0.2	77	0	13	0	10.8	1.5
LAP	53	4	30	2.3	1.3	51	0	27	0	10.6	2.8
LDA	208	1	3	1.5	0.1	211	0	3	0	7.0	0.7
LDI	822	0	100	2.2	-0.2	831	0	9	0	8.6	1.1
LIB	471	2	5	1.7	0.7	476	1	6	0	8.8	1.1
LOT	120	1	5	1.8	-0.9	115	1	10	0	10.0	0.3
LPR	30	7	20	2.5	1.5	30	0	13	0	9.7	-0.1
LTU	846	0	4	1.6	-0.2	348	0	5	0	8.4	1.1
MAS	450	0	11	1.8	0.4	467	1	14	0	9.9	0.8
MMZ	96	1	2	1.7	1.0	96	0	2	0	7.2	0.6
MON	112	1	4	1.8	-0.3	108	0	3	0	6.3	0.4
MPD	345	0	4	1.7	0.5	341	1	6	0	9.6	0.8
MPH	751	0	3	1.9	-0.6	741	0	3	0	7.1	0.4
NCA	655	0	4	1.7	0.4	643	0	5	0	8.4	1.0
NVR	42	0	0	1.3	0.0	41	0	0	0	4.5	0.8
NWA	11534	1	11	1.9	0.6	11418	0	11	0	8.6	0.6
OAE	29	0	45	1.6	-0.3	29	0	45	0	5.8	0.7
OAL	36	0	6	2.4	-0.3	37	0	5	0	6.4	-0.4
PAC	315	0	24	1.8	0.3	322	0	70	0	11.6	2.1
PAL	1494	0	13	1.6	-0.1	1456	1	14	0	8.7	1.1
PAO	376	3	59	1.4	0.3	366	0	58	0	7.8	0.1
PUA	26	4	46	1.7	1.1	26	0	58	0	15.3	-2.1
QFA	2551	1	58	1.6	0.4	2539	0	58	0	7.6	0.8
RAF	74	0	4	2.1	1.6	72	0	6	0	8.8	0.4
RAM	71	4	8	2.1	-0.9	70	1	10	0	10.3	1.0
RCH	331	2	15	2.2	0.6	316	0	16	0	10.2	0.9
RJA	30	0	3	1.4	-0.2	30	0	3	0	6.6	2.4
RKA	88	0	0	1.5	-0.5	87	1	2	0	7.1	0.6
RRR	71	0	7	1.7	0.4	71	0	7	0	6.1	0.9
RYN	438	1	43	2.0	1.3	434	0	41	0	6.4	0.0
RZO	191	4	10	1.9	-0.5	190	0	9	0	11.3	1.1
SAA	356	1	3	1.6	-0.7	350	0	3	0	8.3	0.9
SAS	1628	0	32	1.5	-0.3	1619	0	32	0	7.6	0.4
SIA	574	1	8	1.8	0.0	573	0	8	0	8.3	0.7
SLR	276	0	8	1.4	-0.9	276	0	11	0	8.4	0.9
SNB	60	0	2	1.5	-0.4	60	0	5	0	10.5	-1.5

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
SOL	74	0	26	3.2	2.2	74	0	24	0	8.5	-0.2
SVA	110	0	3	1.9	0.1	123	0	2	0	7.6	0.8
SWR	82	1	5	1.5	0.4	83	0	7	0	7.6	0.9
TAP	627	1	6	1.7	-0.2	621	1	6	0	8.8	0.9
TCU	41	2	5	1.6	-1.1	41	0	2	0	7.7	0.4
THA	294	0	4	1.7	-0.1	294	1	5	0	8.2	0.8
THT	112	0	29	2.0	0.6	112	0	28	0	8.3	1.7
TOW	83	0	10	1.8	0.4	87	0	11	0	8.7	0.3
TPA	29	0	0	1.0	0.1	27	0	0	0	6.4	0.9
TSC	81	4	15	2.2	0.9	83	0	17	0	13.3	1.2
TWA	1713	1	17	1.5	0.2	1689	0	17	0	7.5	0.8
UAL	123991	0	100	1.3	-0.1	123877	0	100	0	6.3	0.7
UPS	1392	1	23	1.7	0.4	1379	0	23	0	7.4	0.6
USA	299	1	5	1.7	0.0	258	0	6	0	8.1	0.6
VIR	676	0	2	1.6	-0.2	687	0	4	0	8.2	0.7
VKG	164	0	5	1.6	-0.1	165	1	7	0	7.6	1.1
VRG	198	4	30	2.4	1.0	203	0	29	0	12.0	1.2
VVR	24	0	29	2.5	0.3	24	0	29	0	7.8	2.2
WOA	224	0	6	1.6	0.5	239	0	8	0	9.5	0.8
AN	19938	0	18	1.2	0.4	19938	0	18	0	5.8	1.0
AR	1873	21	100	3.6	3.2	1872	1	25	0	16.1	3.9
BA	10916	0	10	1.5	0.6	10829	0	10	0	6.2	0.9
EU	67512	0	22	1.3	0.0	67512	0	22	0	5.8	0.6
KL	7605	0	11	1.4	0.7	7550	0	11	0	5.6	1.1
LN	63	0	38	1.4	-0.1	63	0	40	0	9.0	1.4
MK	3558	0	6	1.7	1.2	3525	0	6	0	7.8	1.7
NZ	2635	0	9	1.1	0.1	2635	0	9	0	6.3	0.6
QF	33634	0	12	1.4	0.7	33631	0	13	0	6.1	0.7
SA	2906	1	4	1.9	1.4	2893	0	4	0	7.0	1.3
WA	398	10	17	1.6	0.5	384	9	100	0	14.4	-2.1
XX	4397	1	7	1.7	0.4	5122	0	100	0	10.7	1.2
N	916	2	29	2.4	0.6	923	0	26	0	7.9	0.9
US ACARS	554640	0	49	1.4	0.4	554624	0	50	0	6.5	1.1

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:1000.0 – 300.1 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored		
	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS		:10.0 °C ; 60 m s^{-1} Vector Wind
SELECTION CRITERIA		:N REP ≥ 20

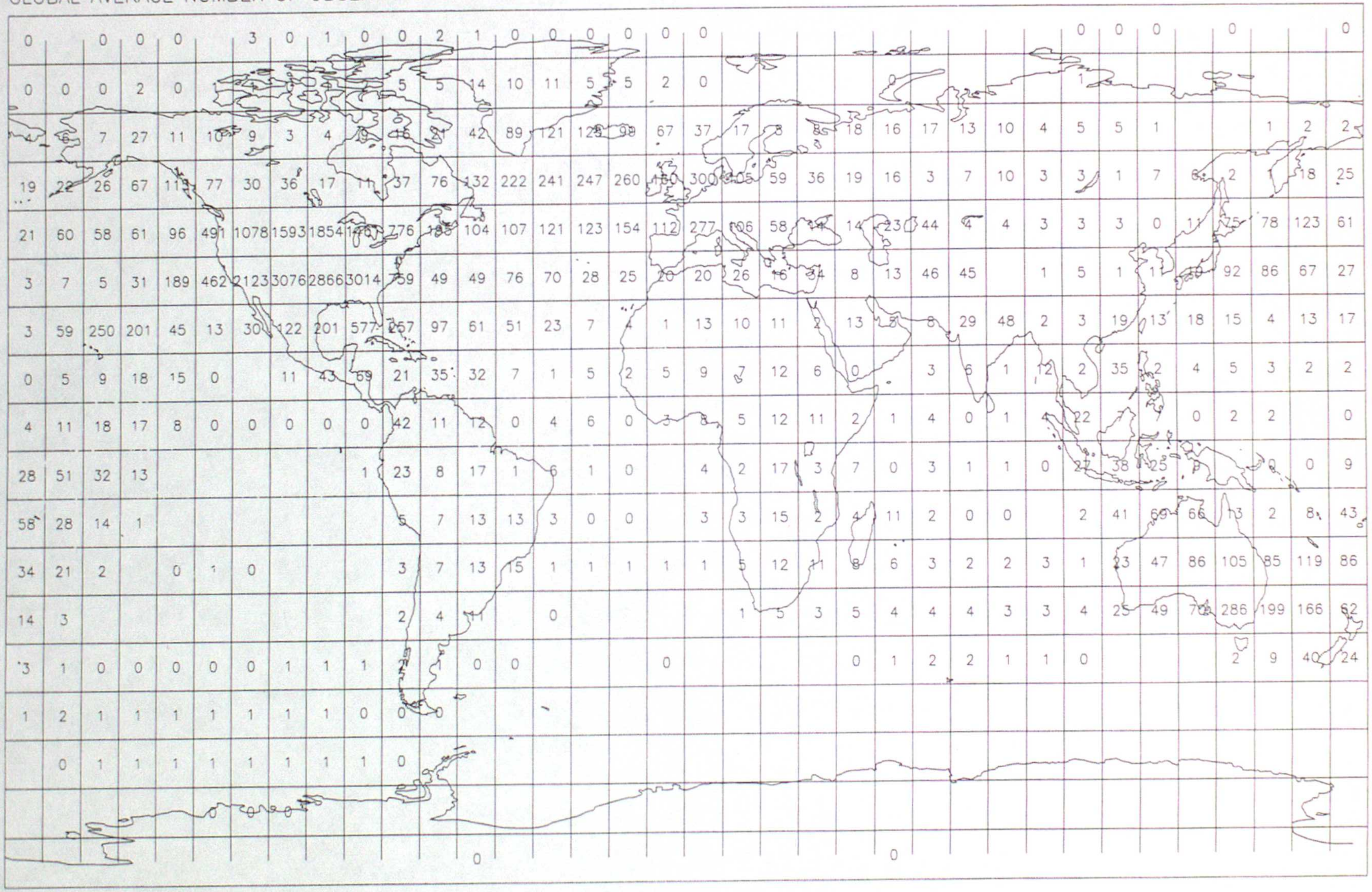
NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAH	52	0	23	2.3	0.0	38	0	21	0	9.0	-1.2
AAL	412	0	17	1.3	0.2	419	0	16	0	8.1	0.7
AAR	33	0	18	1.6	-0.3	36	0	17	0	6.8	0.1
AEY	24	0	4	1.2	1.0	24	0	4	0	6.0	0.8
AFP	24	17	21	1.9	0.8	25	0	16	0	16.6	-1.1
AFR	73	1	11	1.2	-0.4	74	1	15	0	8.5	1.9
ANG	29	0	66	0.7	0.1	29	0	66	0	4.1	-0.2
ANQ	57	0	74	1.1	-0.4	52	0	71	0	3.5	-0.4
ANZ	138	8	43	1.4	0.4	138	0	40	0	6.7	1.3
AOM	145	1	5	1.8	1.3	144	0	6	0	6.7	0.4
AVN	26	0	50	1.1	0.5	26	0	50	0	6.4	-0.4
BAF	47	0	4	2.5	0.8	47	0	6	0	8.4	1.6
CAL	21	0	19	0.9	0.3	23	0	22	0	10.1	0.3
CDN	21	0	5	2.1	-1.1	21	5	10	0	12.8	0.2
CFC	85	1	9	2.5	1.7	85	0	8	0	7.3	0.9
CFG	75	7	13	1.4	-0.8	75	0	13	0	7.1	1.1
CKS	45	0	40	2.5	-0.1	45	0	38	0	6.9	2.3
CLX	23	4	17	2.2	-0.7	23	0	13	0	8.6	-1.2
CMI	81	2	4	1.5	0.6	95	0	3	0	10.6	3.5
COA	232	1	24	1.2	0.3	231	0	25	0	11.0	1.4
CRL	27	0	7	2.4	0.9	27	0	4	0	5.9	0.7
CUB	77	0	0	1.5	1.1	79	1	3	0	9.3	0.0
DAF	40	0	0	1.3	0.1	40	0	0	0	5.6	-0.2
DAL	335	1	34	1.5	0.5	339	0	34	0	7.7	0.3
DHL	321	0	83	6.4	-6.2	312	1	21	0	14.7	2.6
DLH	188	1	15	2.3	0.5	191	1	12	0	7.0	0.5
EIA	38	0	18	3.2	1.4	37	3	19	0	9.3	0.4
EVA	131	2	22	1.3	-0.4	135	1	24	0	9.4	1.2
EWW	112	1	4	1.5	0.7	118	0	4	0	9.1	1.7
FDX	485	1	8	1.4	0.6	489	0	8	0	8.5	0.7
FIN	49	0	0	1.3	0.4	47	0	2	0	8.7	0.6
FWQ	78	3	55	1.7	0.4	78	0	54	0	9.2	1.8
GAF	49	2	6	1.7	0.2	50	0	2	0	7.6	2.3
GCO	113	0	5	2.0	0.8	115	0	23	0	16.0	2.3
GHA	74	3	4	1.3	0.4	73	0	4	0	9.3	0.7
HAL	83	0	37	2.1	0.9	80	0	41	0	10.6	1.8
HLA	24	0	0	1.6	-0.5	25	0	8	0	11.9	1.5
IBE	154	3	22	1.8	0.9	154	0	21	0	8.6	-0.1
ICE	67	3	3	1.1	-0.5	67	0	0	0	6.1	0.2
JAA	58	2	12	1.8	0.9	58	0	10	0	6.5	1.2
JAL	116	2	9	1.4	0.3	115	0	10	0	9.9	1.5
JAZ	141	0	6	1.9	1.3	140	0	7	0	7.4	-1.1
JMC	27	0	11	1.6	1.4	26	8	15	0	7.8	-1.3
KAL	158	2	22	1.6	-0.5	157	1	24	0	12.1	-0.9
KIW	57	0	44	3.0	2.1	57	0	40	0	6.5	0.8
KLM	52	0	0	1.2	0.6	53	0	2	0	8.9	0.9
LIB	48	2	6	1.9	0.5	48	0	4	0	6.5	0.0
MAS	27	0	22	1.2	0.2	26	0	23	0	7.9	-0.3
MPH	69	0	16	2.0	-0.3	70	0	14	0	9.9	1.0
NCA	129	0	2	1.7	0.3	126	0	2	0	7.3	0.6
NWA	371	2	14	1.7	0.4	366	1	15	0	10.9	-0.6
PAC	52	0	10	1.6	0.3	52	0	60	0	9.4	1.3
PAL	30	0	10	1.8	0.2	31	0	6	0	6.5	-0.4
QFA	99	10	45	1.3	0.5	101	0	41	0	6.8	1.1
RCH	248	0	10	2.2	0.7	242	0	13	0	11.0	1.6
RRR	248	1	17	4.3	3.5	255	0	14	0	10.2	1.0
RYN	25	0	44	2.3	1.7	26	0	46	0	6.6	1.2
SAA	58	3	3	1.1	-0.8	58	0	5	0	8.6	0.5
SAS	78	1	37	1.7	-0.2	77	0	35	0	6.3	1.5

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
SIA	34	0	9	1.4	0.2	33	0	6	0	5.0	0.8
SWR	36	0	17	1.6	0.3	37	0	27	0	14.6	1.7
UAL	194278	0	100	1.3	0.1	192680	0	100	0	5.4	0.4
UPS	187	1	9	1.1	0.3	188	0	10	0	7.2	1.0
VHJ	99	1	2	2.2	0.6	99	0	2	0	8.3	0.7
VTA	44	0	9	2.6	-1.7	48	0	13	0	5.2	1.4
VVP	51	8	43	3.1	1.3	49	0	37	0	8.9	0.1
AN	66955	0	66	1.4	0.0	64824	0	65	0	4.2	0.4
AR	1533	12	100	2.3	1.6	1464	0	52	0	6.7	1.5
BA	8259	0	61	1.5	0.4	7912	0	60	0	4.8	0.7
EU	245901	0	67	1.2	0.1	237923	0	66	0	4.5	0.1
KL	5722	0	56	1.4	0.6	5586	0	55	0	4.6	0.4
MK	2360	0	53	1.4	0.7	2291	0	52	0	5.2	0.4
NZ	7746	0	55	1.5	0.3	7470	0	53	0	5.7	0.9
QF	24944	0	57	1.3	0.4	24756	0	57	0	4.3	0.3
SA	2129	0	50	1.3	0.3	2058	0	49	0	4.9	0.9
WA	60	17	23	2.2	0.5	57	14	100	0	18.6	-7.4
XX	927	7	13	2.0	0.3	941	1	100	0	14.1	1.6
N	27	11	22	3.6	2.2	31	0	29	0	15.3	1.6
US ACARS	513941	0	52	1.4	0.4	506526	0	53	0	5.8	0.3

MEAN DAILY COUNT OF AIRCRAFT 300 – 150 HPA
APRIL 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 31410

FIGURE 3A



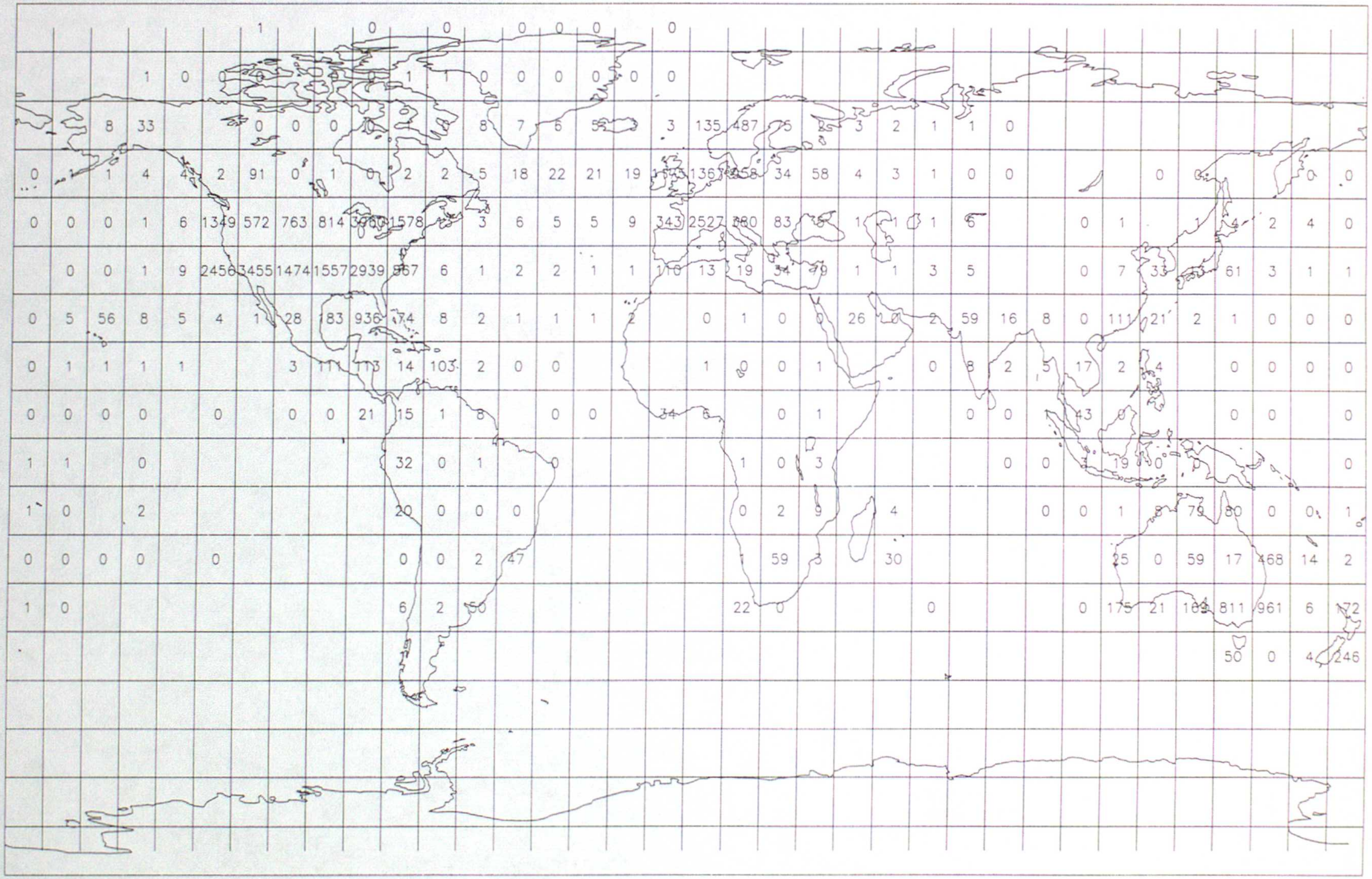
MEAN DAILY COUNT OF AIRCRAFT 1000 – 301 HPA

FIGURE 3B

APRIL 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 35949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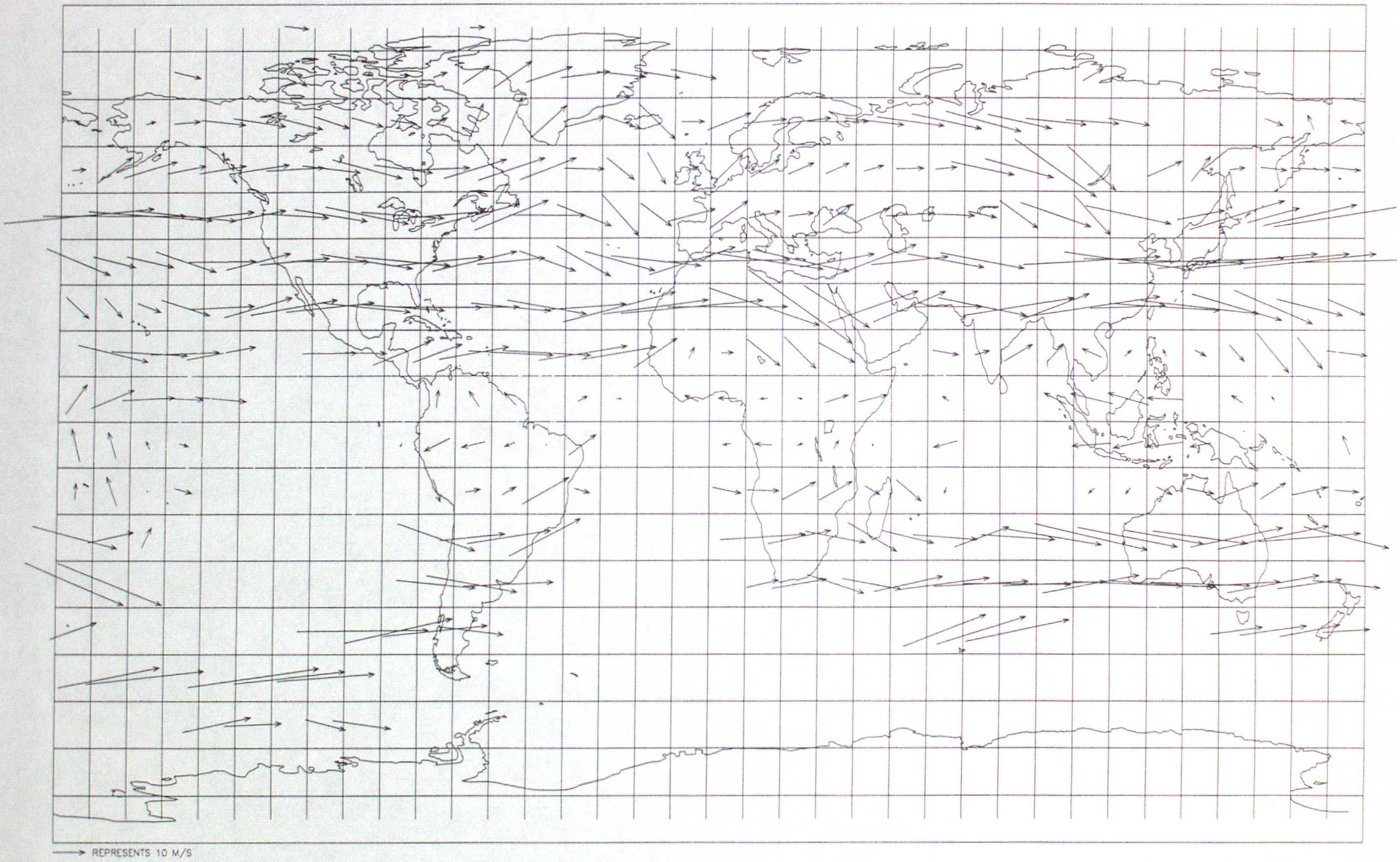
0 1 1 4 4 2 91 0 1 0 2 2 5 18 22 21 19 1367 258 34 58 4 3 1 0 0 0 0 0 0
0 0 0 1 6 1349 572 763 814 3960 1578 3 6 5 5 9 343 2527 380 83 1 1 1 6 0 1 1 4 2 4 0
0 0 1 9 2456 3455 1474 1557 2939 567 6 1 2 2 1 1 110 13 19 34 79 1 1 3 5 0 7 33 61 3 1 1
0 5 56 8 5 4 1 28 183 936 174 8 2 1 1 1 2 0 1 0 0 26 0 2 59 16 8 0 111 21 2 1 0 0 0
0 1 1 1 1 3 111 113 14 103 2 0 0 1 0 0 1 0 8 2 5 17 2 4 0 0 0 0
0 0 0 0 0 0 0 21 15 1 8 0 0 34 6 0 1 0 0 1 43 0 0 0 0
1 1 0 32 0 1 0 1 0 3 0 0 3 19 0 0 0
1 0 2 20 0 0 0 0 2 9 4 0 0 1 8 79 80 0 0 1
0 0 0 0 0 0 0 2 47 1 59 3 30 25 0 59 17 468 14 2
1 0 6 2 50 22 0 0 0 175 21 169 811 961 6 172
50 0 4 246

FIGURE 4A

AIRCRAFT MEAN WINDS BETWEEN 300 AND 150 HPA
APRIL 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



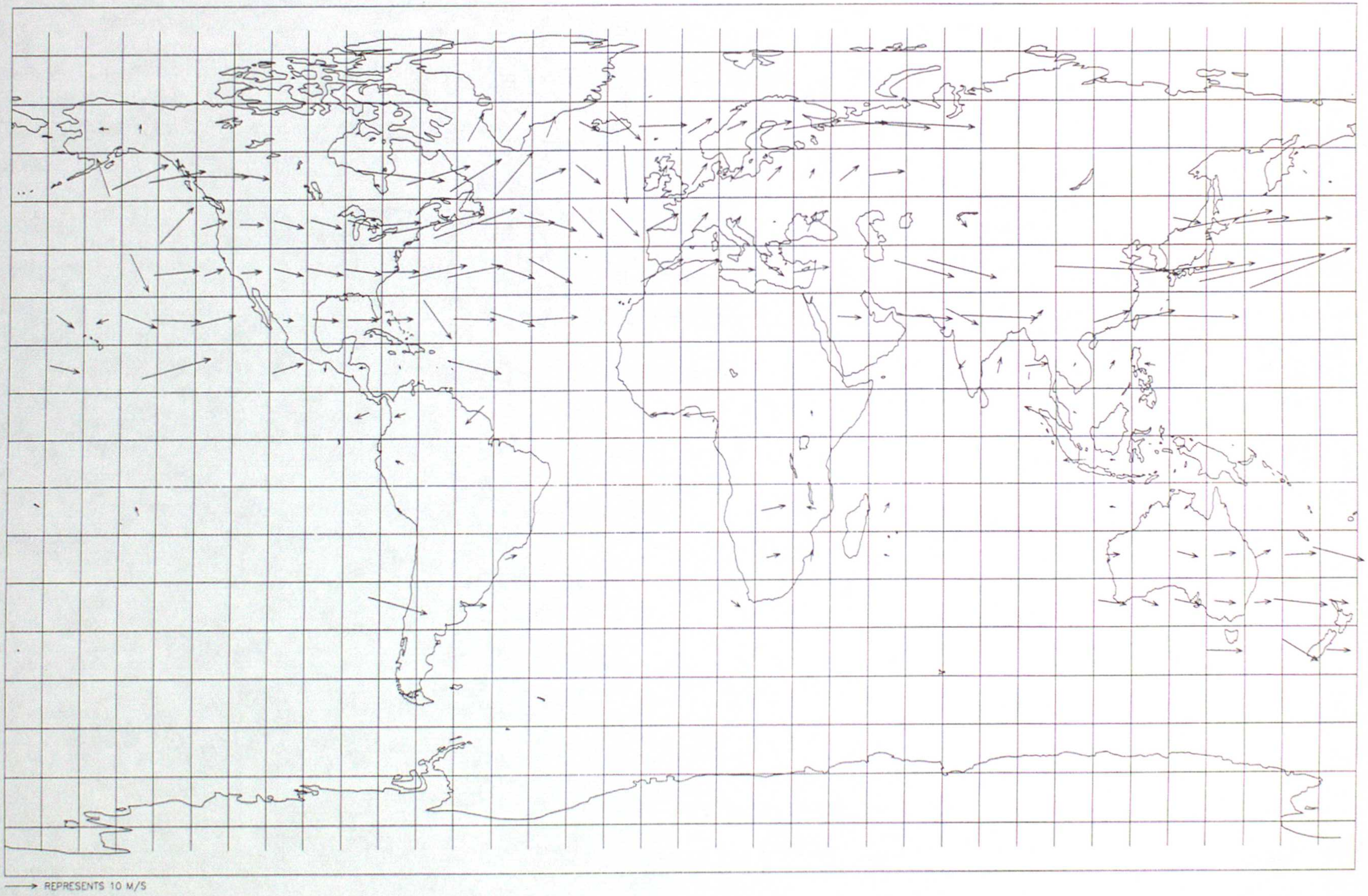
AIRCRAFT MEAN WINDS BETWEEN 1000 AND 301 HPA

FIGURE 4B

APRIL 2000

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



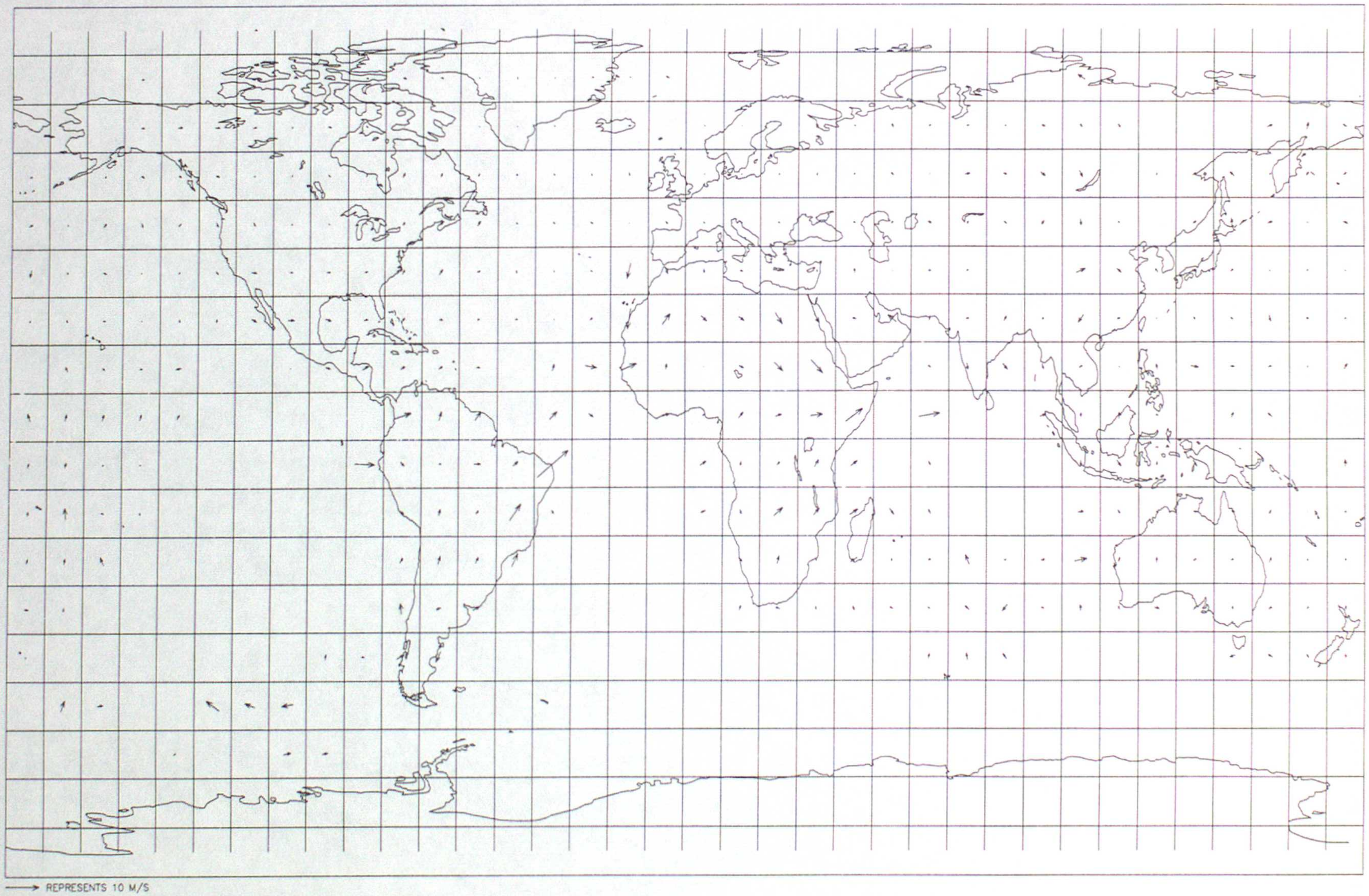
AIRCRAFT MEAN O−B WINDS BETWEEN 300 AND 150 HPA

FIGURE 5A

APRIL 2000

OBSERVATIONS WITH O−B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



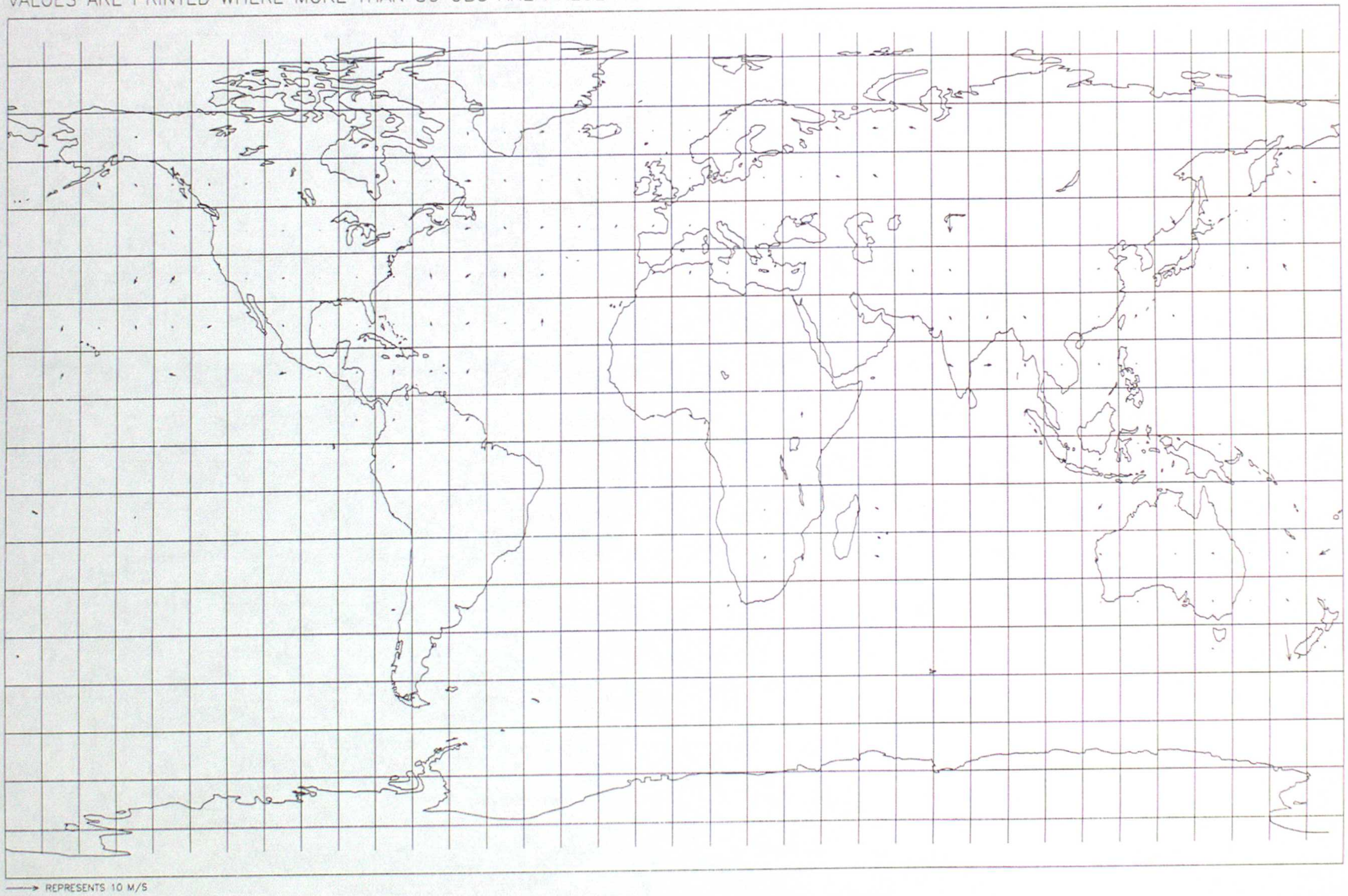
AIRCRAFT MEAN O−B WINDS BETWEEN 1000 AND 301 HPA

FIGURE 5B

APRIL 2000

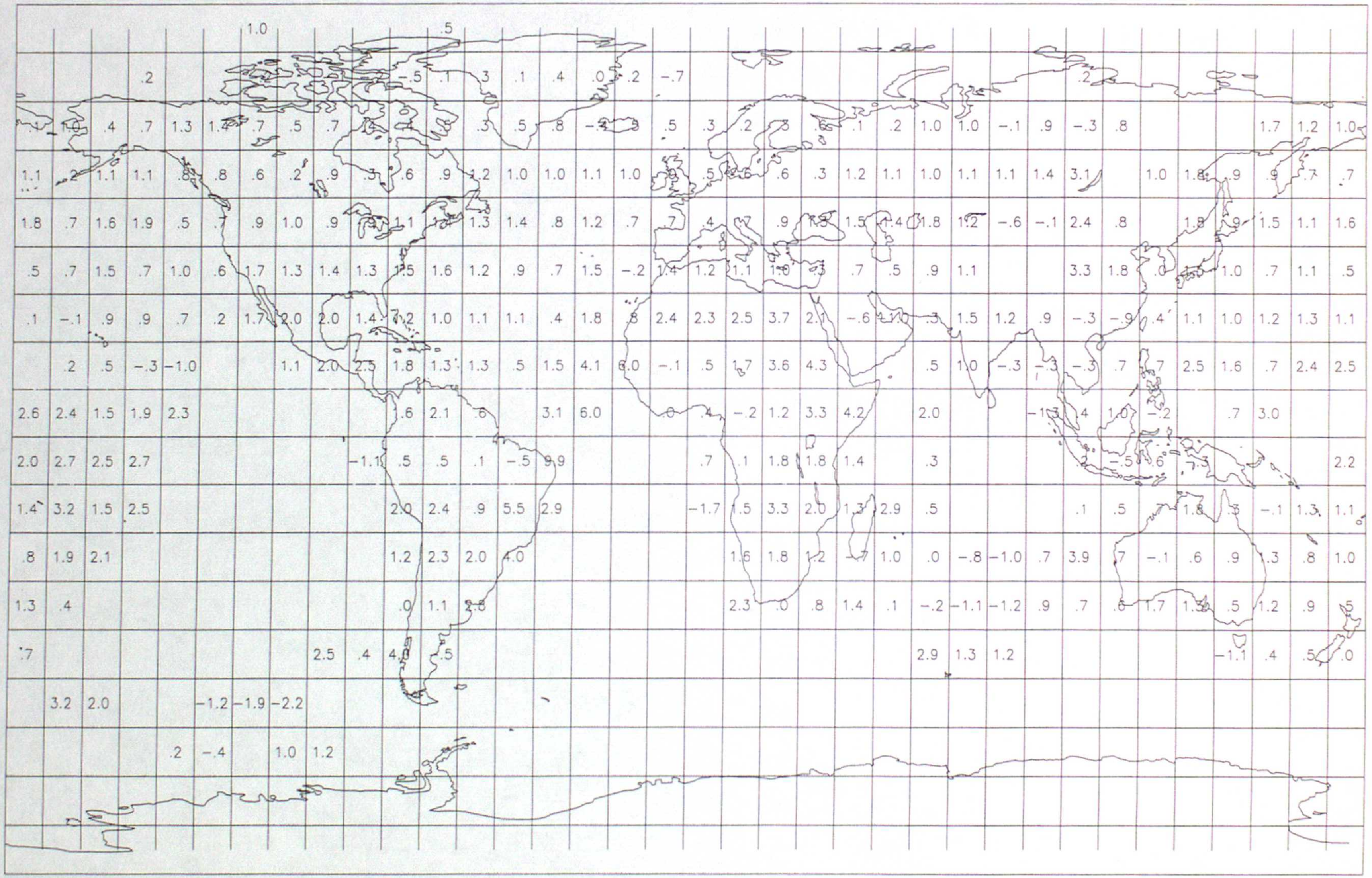
OBSERVATIONS WITH O−B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



AIRCRAFT : MEAN O-B SPEEDS (M/S) 300 – 150 HPA
APRIL 2000
OBSERVATIONS WITH O-B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 6A


1.0 .5
.2 -.5 .1 .3 .1 .4 .0 .2 -.7 .2
.1 1.0 .4 .7 1.3 1.4 .7 .5 .7 .6 .4 .5 .3 .5 .8 -.3 .3 .5 .3 .2 .3 .6 .1 .2 1.0 1.0 -.1 .9 -.3 .8 1.7 1.2 1.0
1.1 .2 1.1 1.1 .8 .8 .6 .2 .9 .3 .6 .9 1.2 1.0 1.0 1.1 1.0 .9 .5 .6 .6 .3 1.2 1.1 1.0 1.1 1.1 1.4 3.1 1.0 1.8 .9 .9 .7 .7
1.8 .7 1.6 1.9 .5 .7 .9 1.0 .9 .9 1.1 1.1 1.3 1.4 .8 1.2 .7 .7 .4 .7 .9 1.3 1.5 1.4 1.8 1.2 -.6 -.1 2.4 .8 1.8 .9 1.5 1.1 1.6
.5 .7 1.5 .7 1.0 .6 1.7 1.3 1.4 1.3 1.5 1.6 1.2 .9 .7 1.5 -.2 1.4 1.2 1.1 1.0 .3 .7 .5 .9 1.1 3.3 1.8 .0 1.5 1.0 .7 1.1 .5
.1 -.1 .9 .9 .7 .2 1.7 2.0 2.0 1.4 1.2 1.0 1.1 1.1 .4 1.8 .8 2.4 2.3 2.5 3.7 2.1 -.6 1.0 .3 1.5 1.2 .9 -.3 -.9 .4 1.1 1.0 1.2 1.3 1.1
.2 .5 -.3 -1.0 1.1 2.0 2.5 1.8 1.3 1.3 .5 1.5 4.1 6.0 -.1 .5 1.7 3.6 4.3 .5 1.0 -.3 -.3 -.3 .7 .7 2.5 1.6 .7 2.4 2.5
2.6 2.4 1.5 1.9 2.3 1.6 2.1 .6 3.1 6.0 .0 .4 -.2 1.2 3.3 4.2 2.0 -1.3 .4 1.0 -.2 .7 3.0
2.0 2.7 2.5 2.7 -1.1 .5 .5 .1 -.5 9.9 .7 .1 1.8 1.8 1.4 .3 .2 -.5 .6 -.3 2.2
1.4 3.2 1.5 2.5 2.0 2.4 .9 5.5 2.9 -1.7 1.5 3.3 2.0 1.3 2.9 .5 .1 .5 .7 1.8 .3 -.1 1.3 1.1
.8 1.9 2.1 1.2 2.3 2.0 4.0 1.6 1.8 1.2 -.7 1.0 .0 -.8 -1.0 .7 3.9 .7 -.1 .6 .9 1.3 .8 1.0
1.3 .4 .0 1.1 2.8 2.3 .0 .8 1.4 .1 -.2 -1.1 -1.2 .9 .7 .6 1.7 1.3 .5 1.2 .9 .5
.7 2.5 .4 4.0 .5 2.9 1.3 1.2 -1.1 .4 .5 .0
3.2 2.0 -1.2 -1.9 -2.2
.2 -.4 1.0 1.2

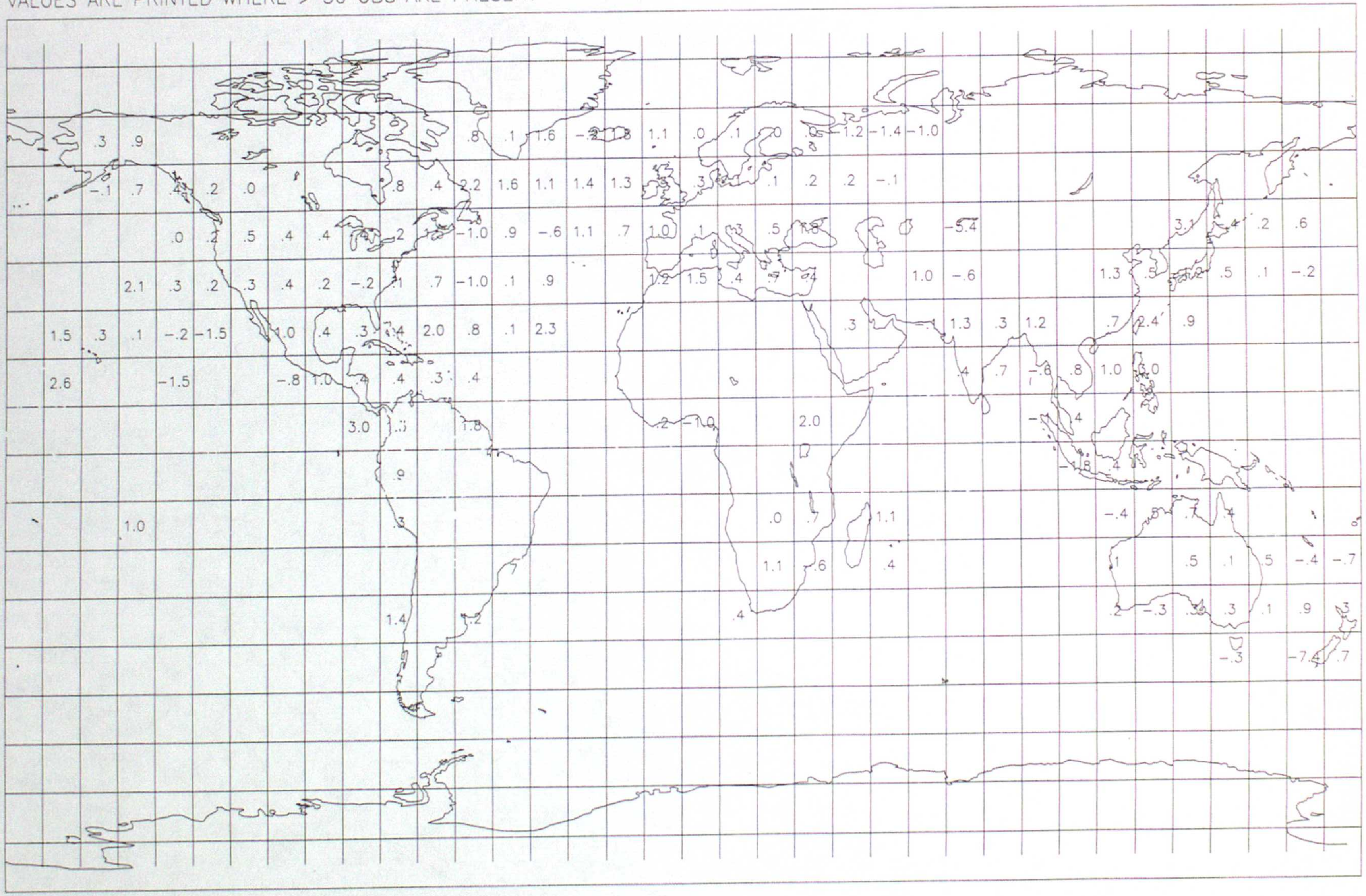
AIRCRAFT : MEAN O-B SPEEDS (M/S) 1000 - 301 HPA

FIGURE 6B

APRIL 2000

OBSERVATIONS WITH O-B VECTOR DIFFERENCE > 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT


.3 .9 .8 .1 1.6 -.2 1.8 1.1 .0 .1 .0 .0 -1.2 -1.4 -1.0
-.1 .7 .4 .2 .0 .8 .4 2.2 1.6 1.1 1.4 1.3 .3 .1 .2 .2 -.1
.0 .2 .5 .4 .4 .4 .2 -1.0 .9 -.6 1.1 .7 1.0 .1 .3 .5 1.8 -5.4 3.1 -.4 .2 .6
2.1 .3 .2 .3 .4 .2 -.2 .1 .7 -1.0 .1 .9 1.2 1.5 .4 .7 .4 1.0 -.6 1.3 .5 .2 .5 .1 -.2
1.5 .3 .1 -.2 -1.5 1.0 .4 .3 .4 2.0 .8 .1 2.3 .3 -.1 1.3 .3 1.2 .7 2.4 .9
2.6 -1.5 -.8 1.0 .4 .4 .3 .4 .4 .7 -.6 .8 1.0 3.0
3.0 1.8 .2 -1.0 2.0 -.1 .4
.9 -1.8 .4
1.0 .3 .0 .7 1.1 -.4 .8 .7 .4
.7 1.1 .6 .4 .1 .5 .1 .5 -.4 -.7
1.4 .2 .4 .2 -.3 .3 .3 .1 .9 .3
-.3 -7.4 .7

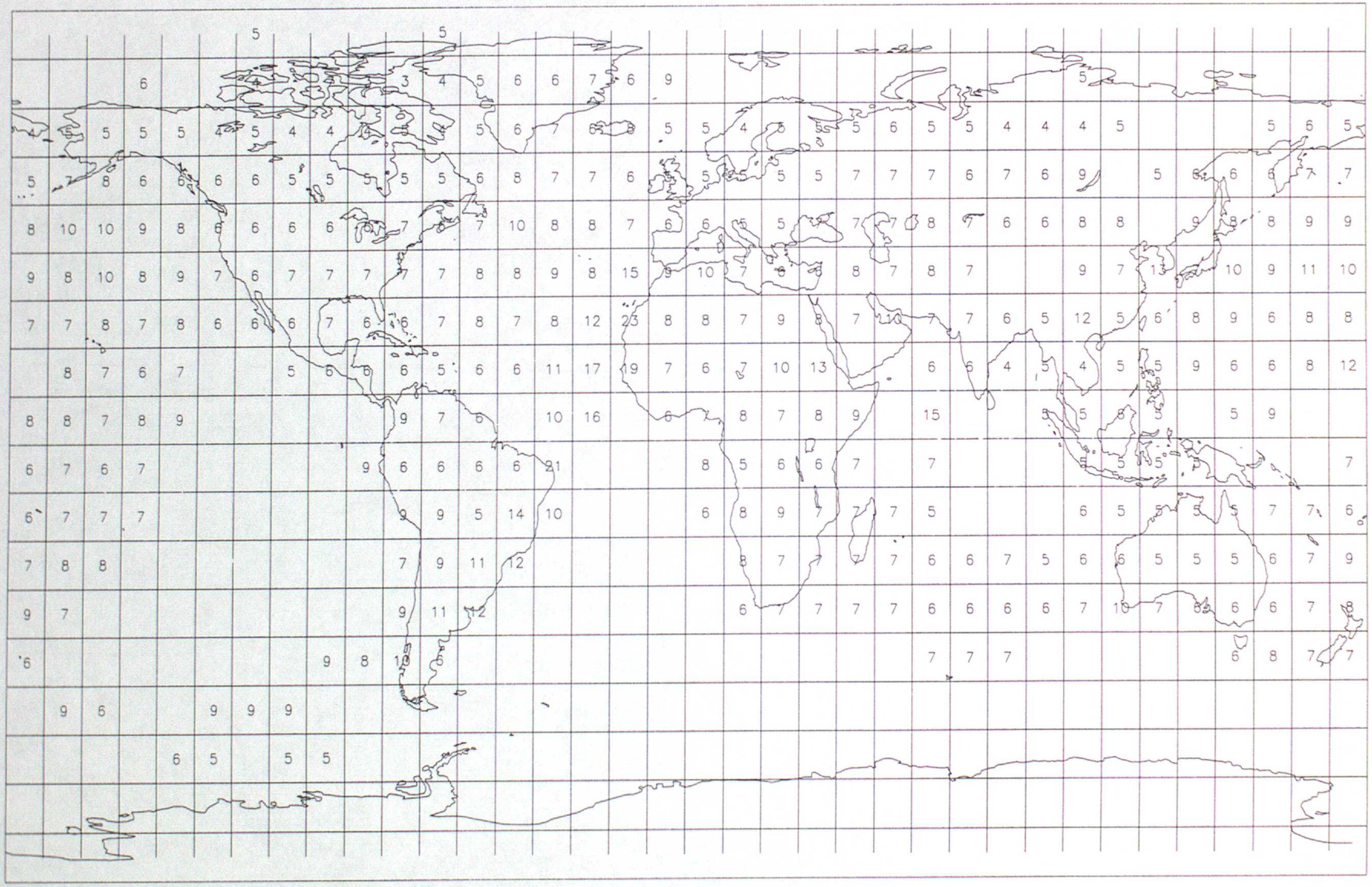
AIRCRAFT : RMS O–B VECTOR (M/S) 300 – 150 HPA

APRIL 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 7A


5 5
6 3 4 5 6 6 7 6 9 5
4 5 5 5 5 4 5 4 4 5 5 6 7 6 8 5 5 4 5 5 5 6 5 5 4 4 4 5 5 6 5
5 7 8 6 6 6 6 5 5 5 5 6 8 7 7 6 5 5 5 5 7 7 7 6 7 6 9 5 6 6 6 7 7
8 10 10 9 8 6 6 6 6 7 7 10 8 8 7 6 6 5 5 7 7 8 7 6 6 8 8 9 8 8 9 9
9 8 10 8 9 7 6 7 7 7 7 7 8 8 9 8 15 9 10 7 6 8 8 7 8 7 9 7 13 10 9 11 10
7 7 8 7 8 6 6 6 7 6 6 7 8 7 8 12 23 8 8 7 9 8 7 10 7 7 6 5 12 5 6 8 9 6 8 8
8 7 6 7 5 5 6 6 5 6 6 11 17 19 7 6 7 10 13 6 6 4 5 4 5 5 9 6 6 8 12
8 8 7 8 9 9 7 6 10 16 6 8 7 8 9 15 5 5 8 5 9
6 7 6 7 9 6 6 6 6 21 8 5 6 6 7 7 5 5 5 7
6 7 7 7 9 9 5 14 10 6 8 9 7 7 7 5 6 5 5 5 5 7 7 6
7 8 8 7 9 11 12 8 7 7 7 7 6 6 7 5 6 6 5 5 5 6 7 9
9 7 9 11 12 6 7 7 7 7 6 6 6 6 7 10 7 8 6 6 7 8
6 9 8 10 6 7 7 7 6 8 7 7
9 6 9 9 9
6 5 5 5

AIRCRAFT : RMS O-B VECTOR (M/S) 1000 - 301 HPA

APRIL 2000

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 7B

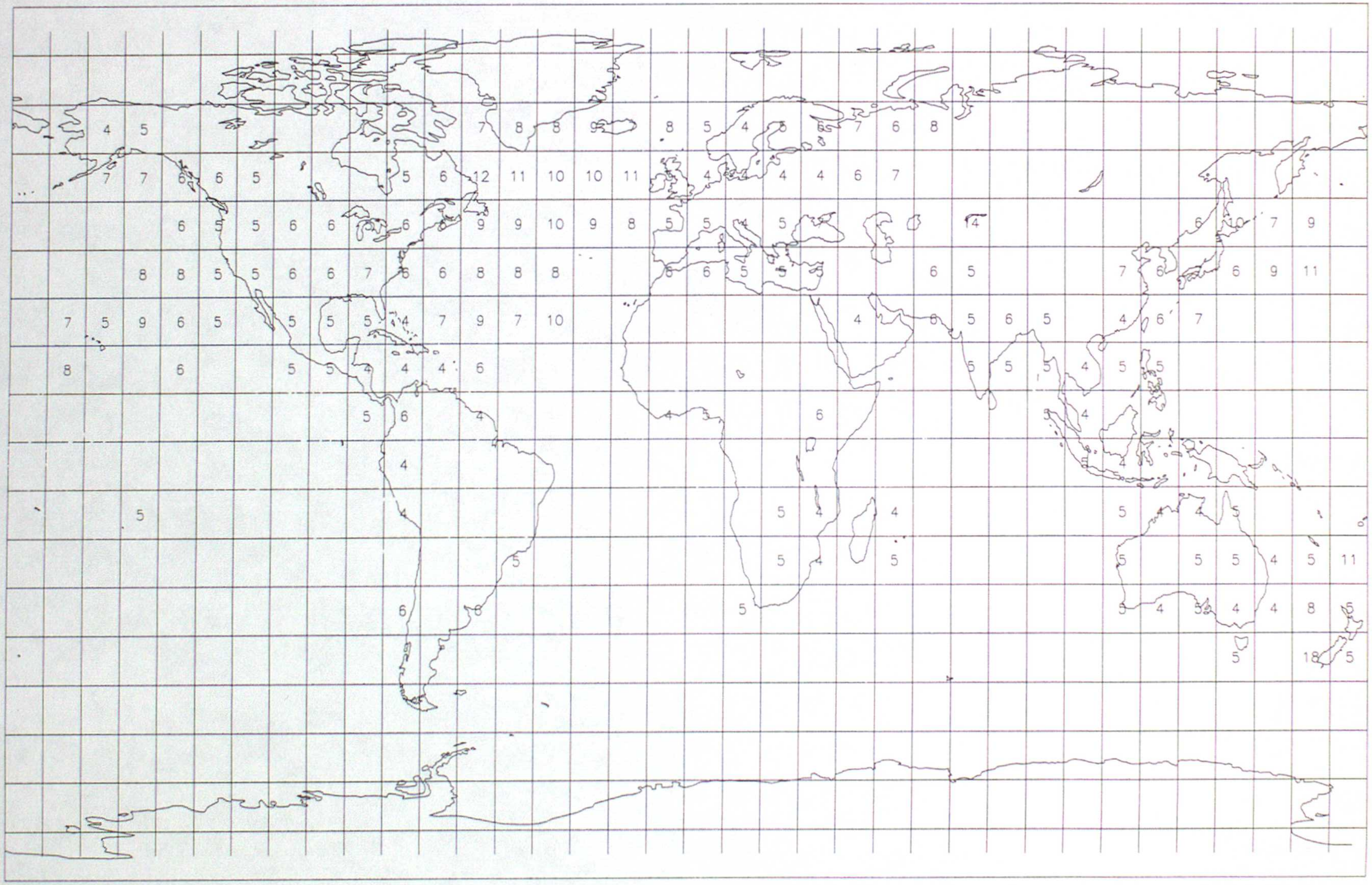

4 5 7 8 8 9 8 5 4 6 5 7 6 8
7 7 6 6 5 5 6 12 11 10 10 11 5 4 4 4 6 7
6 5 5 6 6 6 9 9 10 9 8 5 5 4 5 14 6 10 7 9
8 8 5 5 6 6 7 6 6 8 8 8 6 6 5 5 5 6 5 7 6 6 9 11
7 5 9 6 5 5 5 5 4 7 9 7 10 4 6 5 6 5 4 6 7
8 6 5 5 4 4 4 6 5 5 5 4 5 5
5 6 4 4 5 6 5 4
4 4
5 5 4 4 5 4 4 5
5 5 4 5 5 5 5 4 5 11
6 8 5 5 4 5 4 4 8 5
5 18 5

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	
	ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS	

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
33317	12	Z	100	50/ 27	19	0	29.7	128.3	131.7	4
42101	00	Z	150	30/ 76	21	0	94.8	-56.7	110.5	5
42314	12	Z	150	27/ 95	13	0	95.5	-4.7	95.7	4
42339	00	Z	150	26/ 73	18	0	98.6	53.2	112.0	5
42339	12	Z	100	26/ 73	12	0	140.7	66.4	155.6	5
42369	12	Z	100	27/ 81	15	0	130.9	76.5	151.6	4
42397	00	Z	200	27/ 88	22	0	61.9	-67.9	91.9	6
42647	12	Z	150	23/ 73	11	0	104.8	88.4	137.1	6
42867	12	Z	200	21/ 79	17	0	61.8	103.8	120.8	8
42971	12	Z	150	20/ 86	25	0	97.0	42.6	105.9	5
43003	12	Z	150	19/ 73	17	6	64.9	194.4	205.0	7
43014	12	Z	150	20/ 75	13	0	47.7	100.9	111.6	4
43128	12	Z	100	17/ 78	25	0	90.3	134.2	161.7	5
43192	00	Z	150	15/ 74	11	0	65.6	-69.0	95.2	4
43279	12	Z	100	13/ 80	18	1	73.1	126.1	145.7	7
43295	00	Z	100	13/ 78	23	2	84.2	131.4	156.0	7
43369	12	Z	100	8/ 73	18	1	108.1	90.0	140.7	5
44292	00	Z	1000	48/ 107	26	1	21.3	31.0	37.6	4
57083	12	Z	100	35/ 114	13	0	50.0	120.8	130.7	4
60549	12	Z	300	35/ 0	12	0	24.1	68.1	72.2	4
84628	12	Z	850	-12/ -77	20	1	5.5	-70.3	70.5	6
89009	00	Z	1000	-90/ 0	2	25	98.0	1.0	98.0	7
91366	00	Z	100	9/ 168	20	0	38.4	185.6	189.6	4
97560	00	Z	400	-1/ 136	22	0	58.1	-34.4	67.6	6

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – APRIL 2000

FIGURE 8

ALL HOURS
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1106

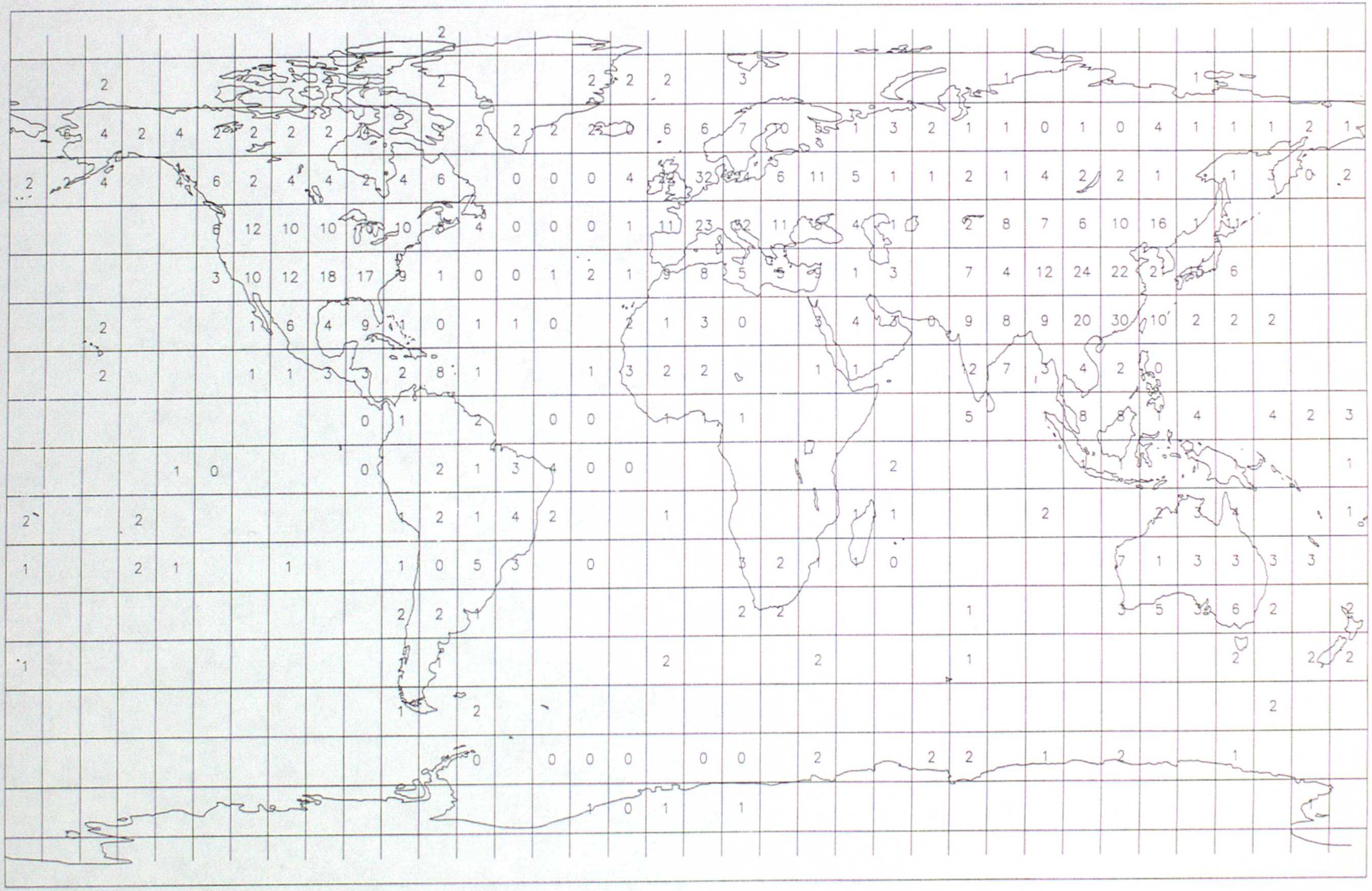

2
2 2 2 2 2 3 1 1
6 4 2 4 2 2 2 2 4 2 2 2 2 23 0 6 6 7 10 5 1 3 2 1 1 0 1 0 4 1 1 1 2 1
2 2 4 4 6 2 4 4 2 4 6 0 0 0 4 22 32 24 6 11 5 1 1 2 1 4 2 2 1 1 1 3 0 2
6 12 10 10 10 10 4 0 0 0 1 11 23 32 11 4 1 0 2 8 7 6 10 16 1 11
3 10 12 18 17 9 1 0 0 1 2 1 9 8 5 5 9 1 3 7 4 12 24 22 2 6
2 1 6 4 9 1 0 1 1 0 2 1 3 0 3 4 3 0 9 8 9 20 30 10 2 2 2
2 1 1 3 3 2 8 1 1 3 2 2 1 1 12 7 3 4 2 0
0 1 2 0 0 1 1 5 8 8 1 4 4 2 3
1 0 0 2 1 3 4 0 0 2 1 1 1
2 2 1 2 1 4 2 1 1 1 2 2 3 4 1
1 2 1 1 1 0 5 3 0 3 2 1 1 0 7 1 3 3 3 3
2 2 1 2 2 1 3 5 3 6 2 2
1 2 2 1 2 2 2
1 2 2
0 0 0 0 0 0 2 2 2 1 2 1
1 0 1 1 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : $\geq$ 10 observations and $\geq$ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
PSPIU	00	V	100	-5/ -81	29	0	100	-0.4	-2.5	19.9	1
PSPIU	12	V	150	-5/ -81	26	0	100	6.2	1.0	21.1	1
42410	12	V	200	26/ 92	13	0	100	-4.8	5.8	24.0	3
60656	12	V	250	28/ -8	23	0	4	-9.5	-7.0	17.0	1
68461	12	V	700	-28/ 28	15	7	73	8.3	36.2	44.0	1
68588	12	V	100	-30/ 31	19	0	0	-15.3	1.9	16.8	1
96035	00	V	300	4/ 99	15	0	13	7.2	1.0	21.6	1

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – APRIL 2000

FIGURE 9

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1276

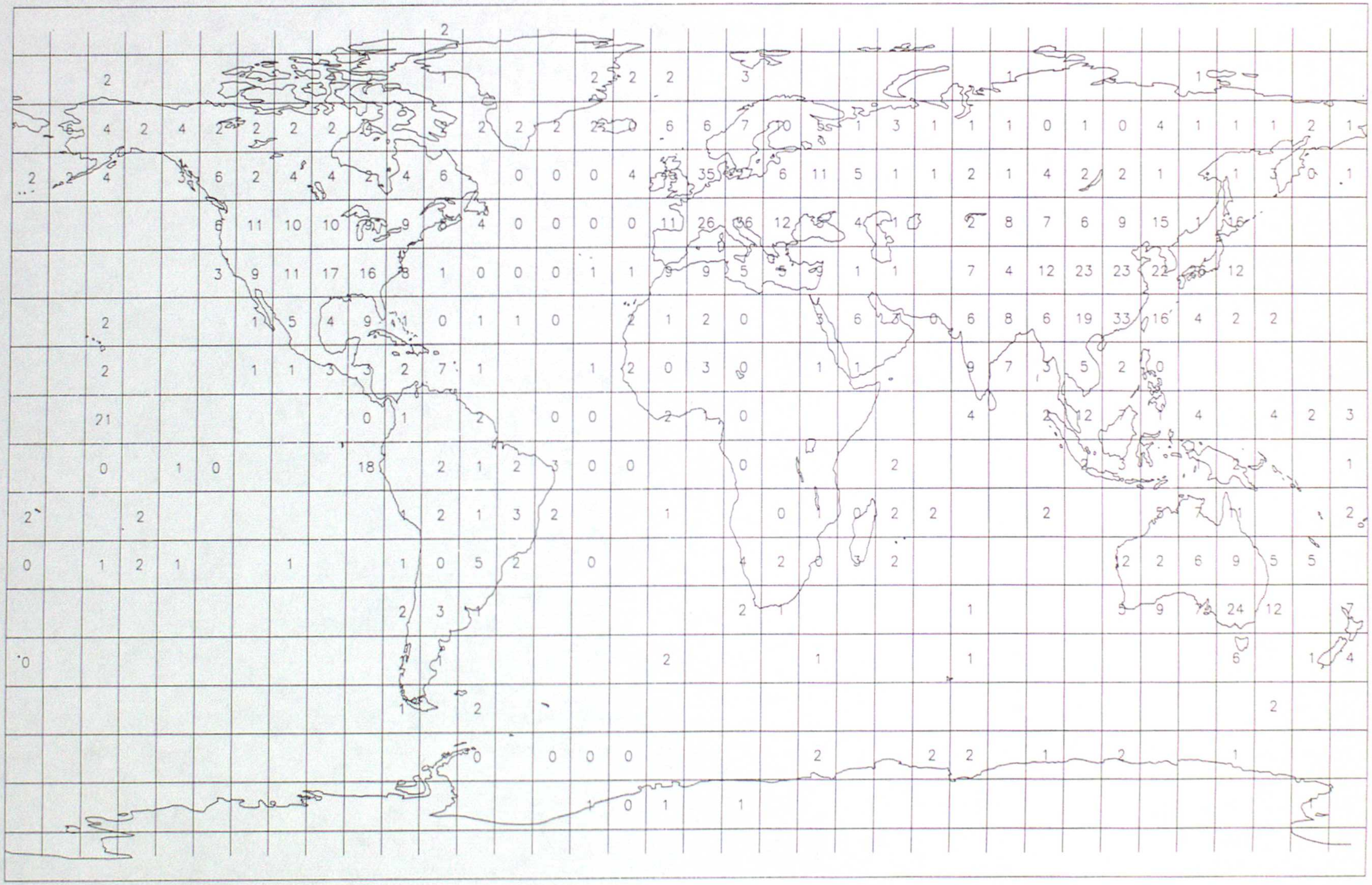

2
2 1 2 2 2 3 1 1
4 2 4 2 2 2 2 2 2 2 2 6 6 7 10 5 1 3 1 1 1 0 1 0 4 1 1 1 2 1
2 2 4 3 6 2 4 4 2 4 6 0 0 0 4 35 6 11 5 1 1 2 1 4 2 2 1 1 3 0 1
6 11 10 10 9 9 4 0 0 0 0 11 26 36 12 4 1 2 8 7 6 9 15 1 16
3 9 11 17 16 8 1 0 0 0 1 1 9 9 5 5 1 1 7 4 12 23 23 22 12
2 1 5 4 9 1 0 1 1 0 2 1 2 0 3 6 0 6 8 6 19 33 16 4 2 2
2 1 1 3 3 2 7 1 1 2 0 3 0 1 1 9 7 3 5 2 0
21 0 1 2 0 0 2 0 4 2 12 7 4 4 2 3
0 1 0 18 2 1 2 3 0 0 0 2 3 1
2 2 1 2 1 3 2 1 0 1 0 2 2 2 5 7 11 2
0 1 2 1 1 1 0 5 2 0 4 2 0 3 2 2 2 6 9 5 5
2 3 1 2 1 1 3 9 7 24 12 7
0 2 1 1 6 1 4
1 2 2
0 0 0 0 2 2 2 1 2 1
1 0 1 1

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 500.0 - 150.0 hPa

Element monitored :WIND DIRECTION in degrees

Parameters monitored

:NUM OBS :Average number of observations at all levels.

:BIAS :Mean difference of observations from background values from all levels.

:MAX SPREAD :(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels

:SD :SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
08594	12	DD	17/ -23	21	-11.2	6.0	13.7
10828	00	DD	48/ 9	14	10.9	4.8	13.7
17240	12	DD	38/ 31	5	-11.0	8.3	13.8
17280	00	DD	38/ 40	16	-11.7	3.2	12.3
33317	00	DD	50/ 27	5	-12.9	9.8	16.2
40179	12	DD	32/ 35	30	-10.4	2.2	8.7
42182	00	DD	29/ 77	23	10.8	2.3	10.3
42397	12	DD	27/ 88	15	13.0	5.4	12.2
48565	00	DD	8/ 98	21	10.0	8.7	27.0
60571	12	DD	32/ -2	16	20.0	2.9	15.1
62337	00	DD	31/ 34	6	-24.0	3.1	7.3
62337	12	DD	31/ 34	5	-21.6	4.9	8.6
72248	12	DD	32/ -94	27	-10.2	1.5	10.3
78866	12	DD	18/ -63	24	-10.7	4.3	9.7
97180	00	DD	-5/ 120	15	-14.0	7.5	18.3

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

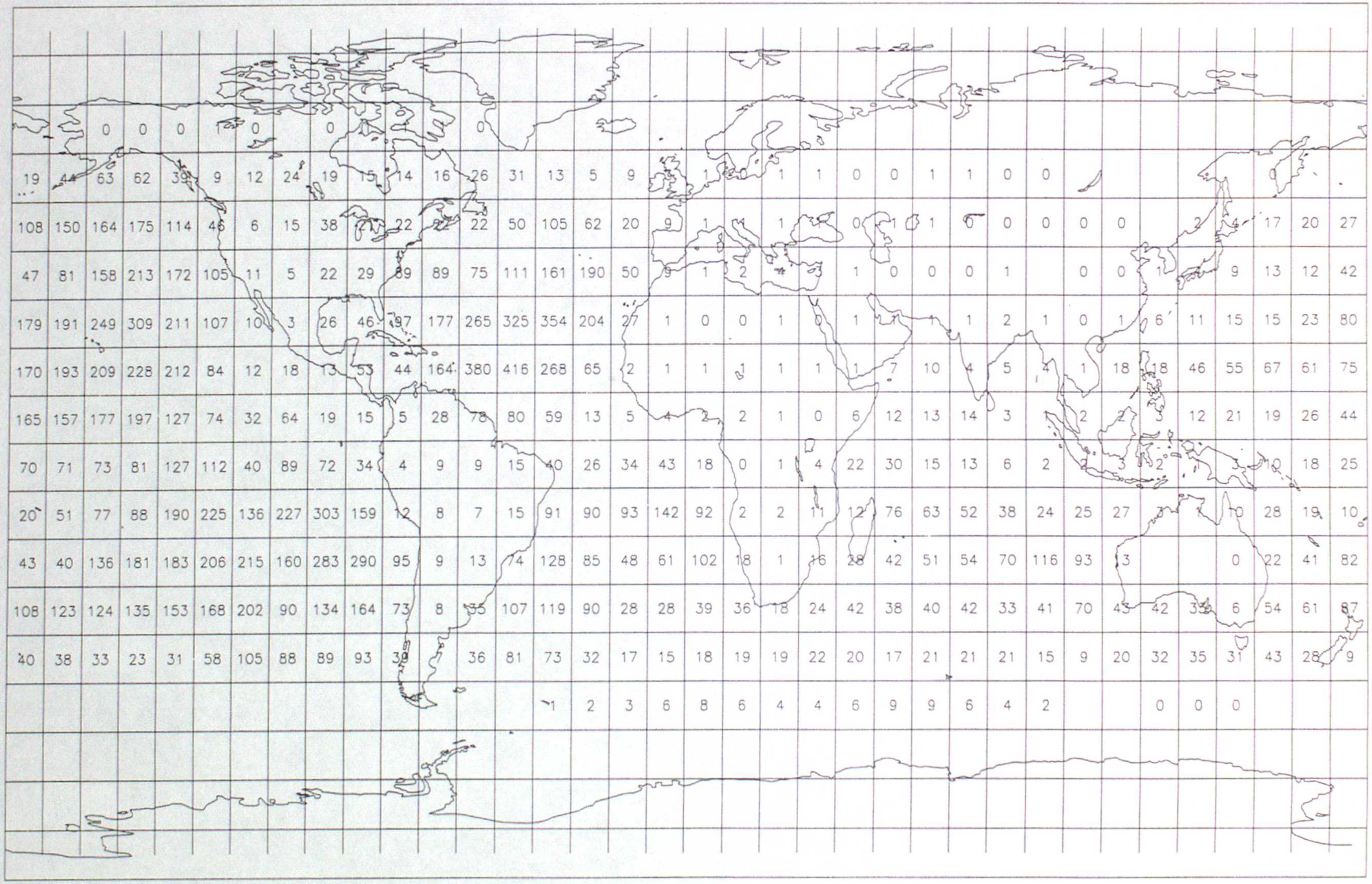
MONTH: APRIL 2000

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from GOES-8, GOES-10, METEOSAT-5, METEOSAT-7, GMS-5, INSAT.
Standard of comparison	:Background field from UKMO global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa :Mean wind :Mean observation minus background vector wind differences :Mean observation minus background speed differences :RMS of observation minus background vector differences

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
APRIL 2000

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 21235



		0	0	0	1	0		0		1		0																							
19	44	63	62	39	9	12	24	19	15	14	16	26	31	13	5	9		1	0	1	1	0	0	1	1	0	0						0		
108	150	164	175	114	46	6	15	38	21	22	22	22	50	105	62	20	9	1	4	1	1	0	1	1	0	0	0	0	0		2	4	17	20	27
47	81	158	213	172	105	11	5	22	29	89	89	75	111	161	190	50	9	1	2	4	3	1	0	0	0	1		0	0	1		9	13	12	42
179	191	249	309	211	107	10	3	26	46	97	177	265	325	354	204	27	1	0	0	1	0	1	1	1	1	2	1	0	1	6	11	15	15	23	80
170	193	209	228	212	84	12	18	13	53	44	164	380	416	268	65	2	1	1	1	1	1	1	7	10	4	5	4	1	18	18	46	55	67	61	75
165	157	177	197	127	74	32	64	19	15	5	28	78	80	59	13	5	4	2	2	1	0	6	12	13	14	3	1	2	2	3	12	21	19	26	44
70	71	73	81	127	112	40	89	72	34	4	9	9	15	40	26	34	43	18	0	1	4	22	30	15	13	6	2	2	3	2	1	3	10	18	25
20	51	77	88	190	225	136	227	303	159	12	8	7	15	91	90	93	142	92	2	2	11	12	76	63	52	38	24	25	27	3	1	10	28	19	10
43	40	136	181	183	206	215	160	283	290	95	9	13	74	128	85	48	61	102	18	1	16	28	42	51	54	70	116	93	13			0	22	41	82
108	123	124	135	153	168	202	90	134	164	73	8	35	107	119	90	28	28	39	36	18	24	42	38	40	42	33	41	70	43	42	33	6	54	61	87
40	38	33	23	31	58	105	88	89	93	39	7	36	81	73	32	17	15	18	19	19	22	20	17	21	21	21	15	9	20	32	35	31	43	28	9
														1	2	3	6	8	6	4	4	6	9	9	6	4	2			0	0	0			

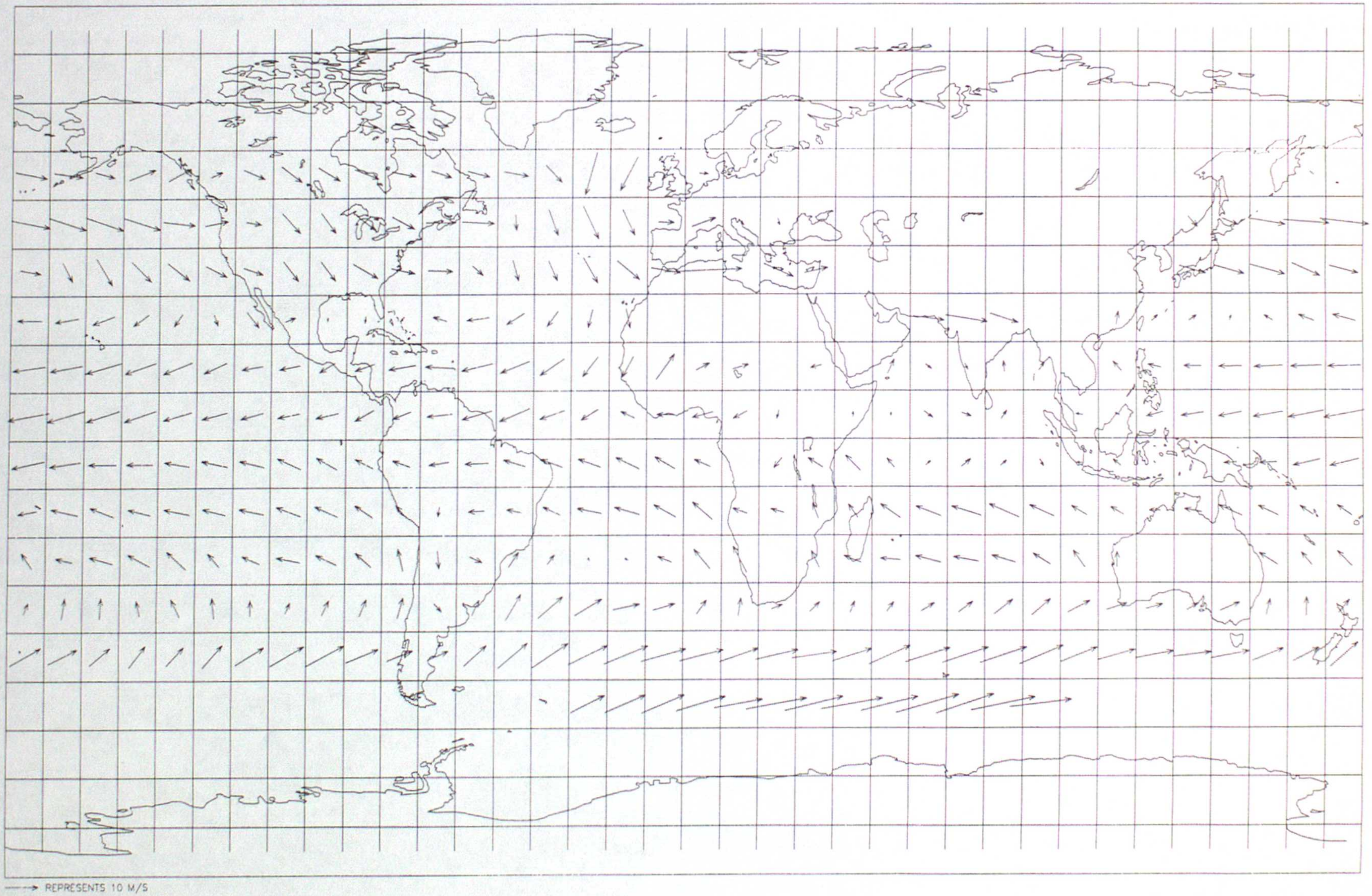
SATOB METEOSAT W/V VECTOR MEAN WINDS BETWEEN 701–1000 HPA

APRIL 2000

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 11


REPRESENTS 10 M/S

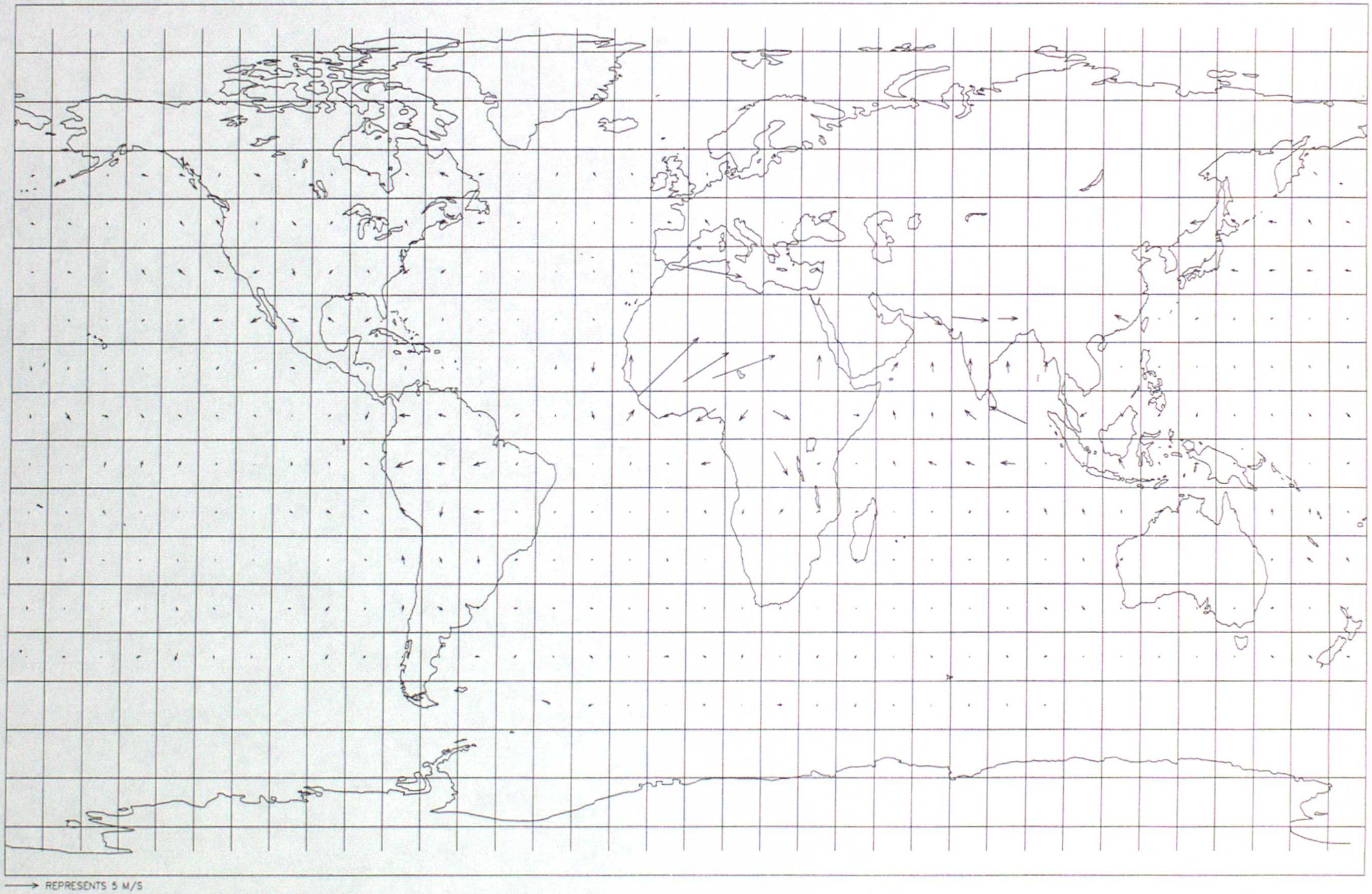
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 701–1000 HPA

APRIL 2000

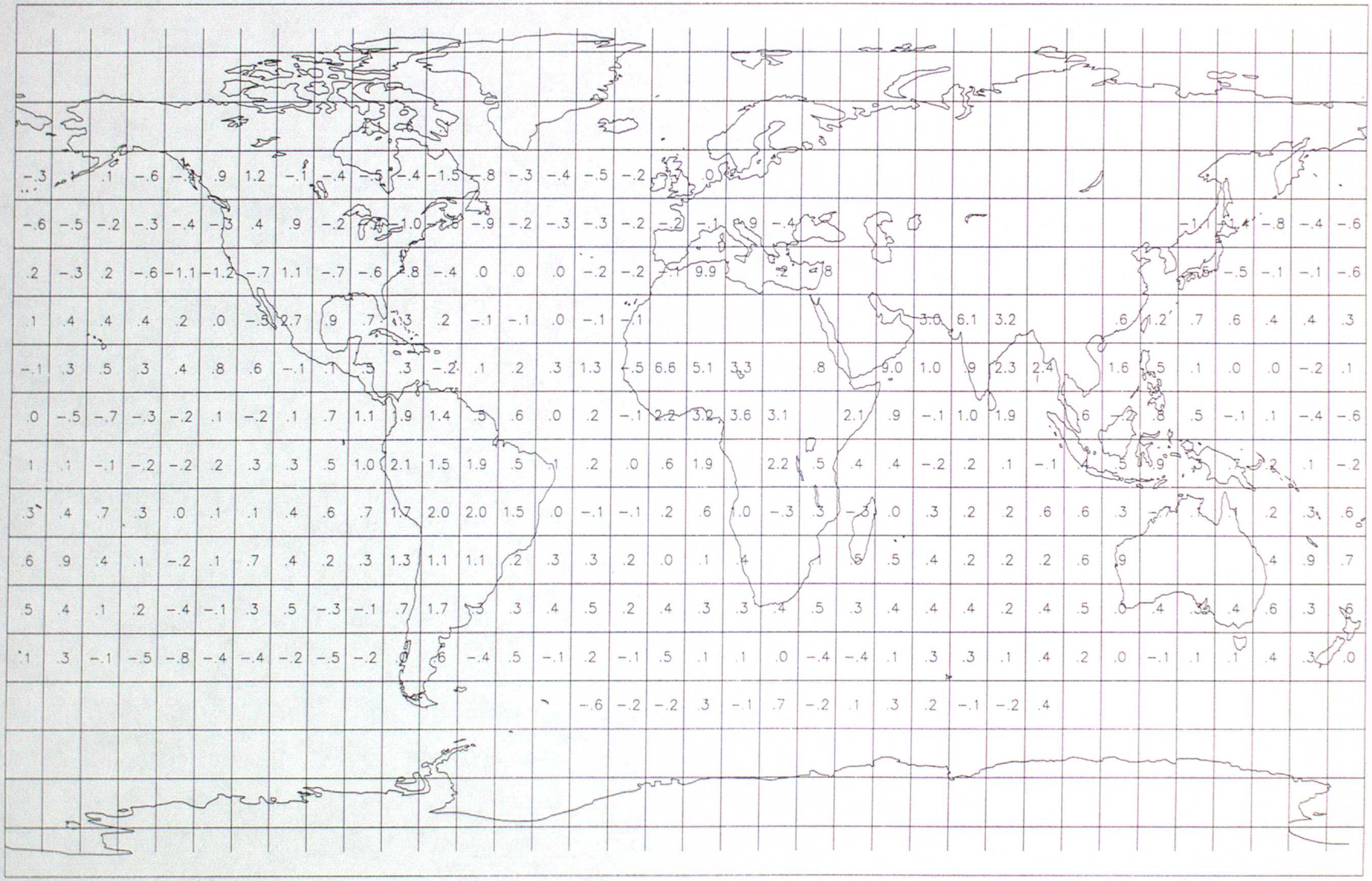
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 12

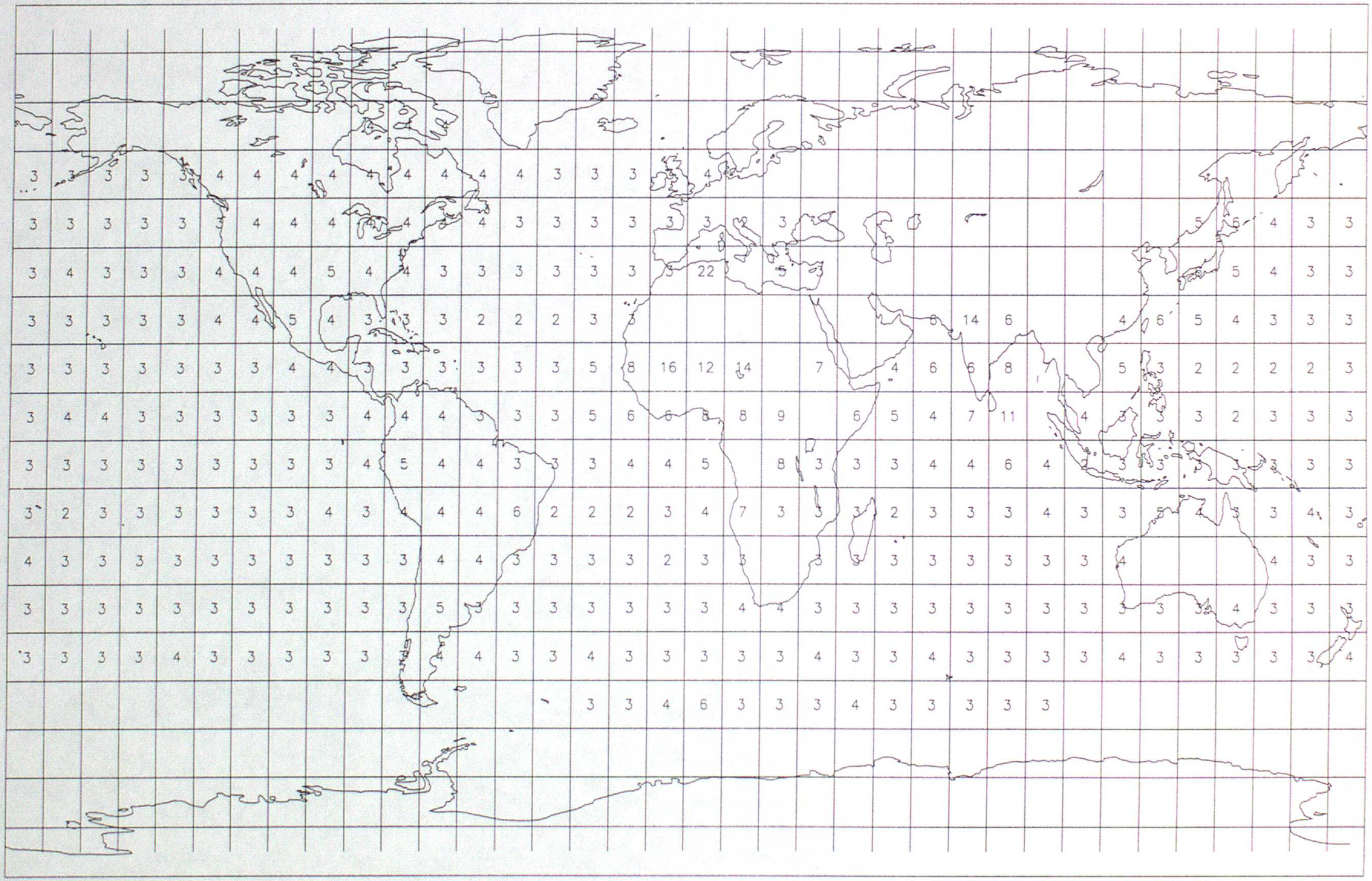


SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
APRIL 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



-.3	-.1	.1	-.6	-.4	.9	1.2	-.1	-.4	-.5	-.4	-1.5	-.8	-.3	-.4	-.5	-.2		.0																	
-.6	-.5	-.2	-.3	-.4	-.3	.4	.9	-.2	-.4	-1.0	-.8	-.9	-.2	-.3	-.3	-.2	-.2	-.1	.9	-.4											-1.1	-1.4	-.8	-.4	-.6
.2	-.3	.2	-.6	-1.1	-1.2	-.7	1.1	-.7	-.6	.8	-.4	.0	.0	.0	-.2	-.2	-.1	9.9		.2	.8										.5	-.5	-.1	-.1	-.6
.1	.4	.4	.4	.2	.0	-.5	2.7	.9	.7	.3	.2	-.1	-.1	.0	-.1	-.1								3.0	6.1	3.2			.6	1.2	.7	.6	.4	.4	.3
-.1	.3	.5	.3	.4	.8	.6	-.1	.1	.5	.3	-.2	.1	.2	.3	1.3	-.5	6.6	5.1	3.3		.8		9.0	1.0	.9	2.3	2.4		1.6	.5	.1	.0	.0	-.2	.1
.0	-.5	-.7	-.3	-.2	.1	-.2	.1	.7	1.1	.9	1.4	.5	.6	.0	.2	-.1	2.2	3.2	3.6	3.1		2.1	.9	-.1	1.0	1.9		.6	-.2	.8	.5	-.1	.1	-.4	-.6
.1	.1	-.1	-.2	-.2	.2	.3	.3	.5	1.0	2.1	1.5	1.9	.5	.1	.2	.0	.6	1.9		2.2	.5	.4	.4	-.2	.2	.1	-.1	.4	.5	.9	.3	.7	.2	.1	-.2
.3	.4	.7	.3	.0	.1	.1	.4	.6	.7	1.7	2.0	2.0	1.5	.0	-.1	-.1	.2	.6	1.0	-.3	.3	-.3	.0	.3	.2	.2	.6	.6	.3	-.7	.1	.1	.2	.3	.6
.6	.9	.4	.1	-.2	.1	.7	.4	.2	.3	1.3	1.1	1.1	.2	.3	.3	.2	.0	.1	.4		.1	.5	.5	.4	.2	.2	.2	.6	.9				.4	.9	.7
.5	.4	.1	.2	-.4	-.1	.3	.5	-.3	-.1	.7	1.7	.3	.3	.4	.5	.2	.4	.3	.3	.4	.5	.3	.4	.4	.4	.2	.4	.5	.0	.4	.3	.4	.6	.3	.6
.1	.3	-.1	-.5	-.8	-.4	-.4	-.2	-.5	-.2	.0	.6	-.4	.5	-.1	.2	-.1	.5	.1	.1	.0	-.4	-.4	.1	.3	.3	.1	.4	.2	.0	-.1	.1	.1	.4	.3	.0
															-.6	-.2	-.2	.3	-.1	.7	-.2	.1	.3	.2	-.1	-.2	.4								

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
APRIL 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


3 3 3 3 3 4 4 4 4 4 4 4 4 4 3 3 3 4
3 3 3 3 3 3 4 4 4 4 4 3 3 3 3 3 3 3 3 5 6 4 3 3
3 4 3 3 3 4 4 4 5 4 4 3 3 3 3 3 3 3 22 5 3 5 4 3 3
3 3 3 3 3 4 4 5 4 3 3 3 2 2 2 3 3 6 14 6 4 6 5 4 3 3 3
3 3 3 3 3 3 3 4 4 3 3 3 3 3 3 5 8 16 12 14 7 4 6 6 8 7 5 3 2 2 2 2 3
3 4 4 3 3 3 3 3 3 4 4 4 3 3 3 5 6 6 8 8 9 6 5 4 7 11 4 3 3 3 2 3 3 3
3 3 3 3 3 3 3 3 3 4 5 4 4 3 3 3 4 4 5 8 3 3 3 4 4 6 4 3 3 3 3 3 3
3 2 3 3 3 3 3 3 4 3 4 4 4 6 2 2 2 3 4 7 3 3 3 2 3 3 3 4 3 3 5 4 3 3 4 3
4 3 3 3 3 3 3 3 3 3 3 4 4 3 3 3 3 2 3 3 3 3 3 3 3 3 3 3 4 4 3 3
3 3 3 3 3 3 3 3 3 3 3 5 3 3 3 3 3 3 3 4 4 3 3 3 3 3 3 3 3 3 3 3 4 3 3 3
3 3 3 3 4 3 3 3 3 3 3 4 4 3 3 4 3 3 3 3 3 4 3 3 4 3 3 3 3 4 3 3 3 3 3 4
3 3 4 6 3 3 3 4 3 3 3 3 3

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
APRIL 2000

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 5781

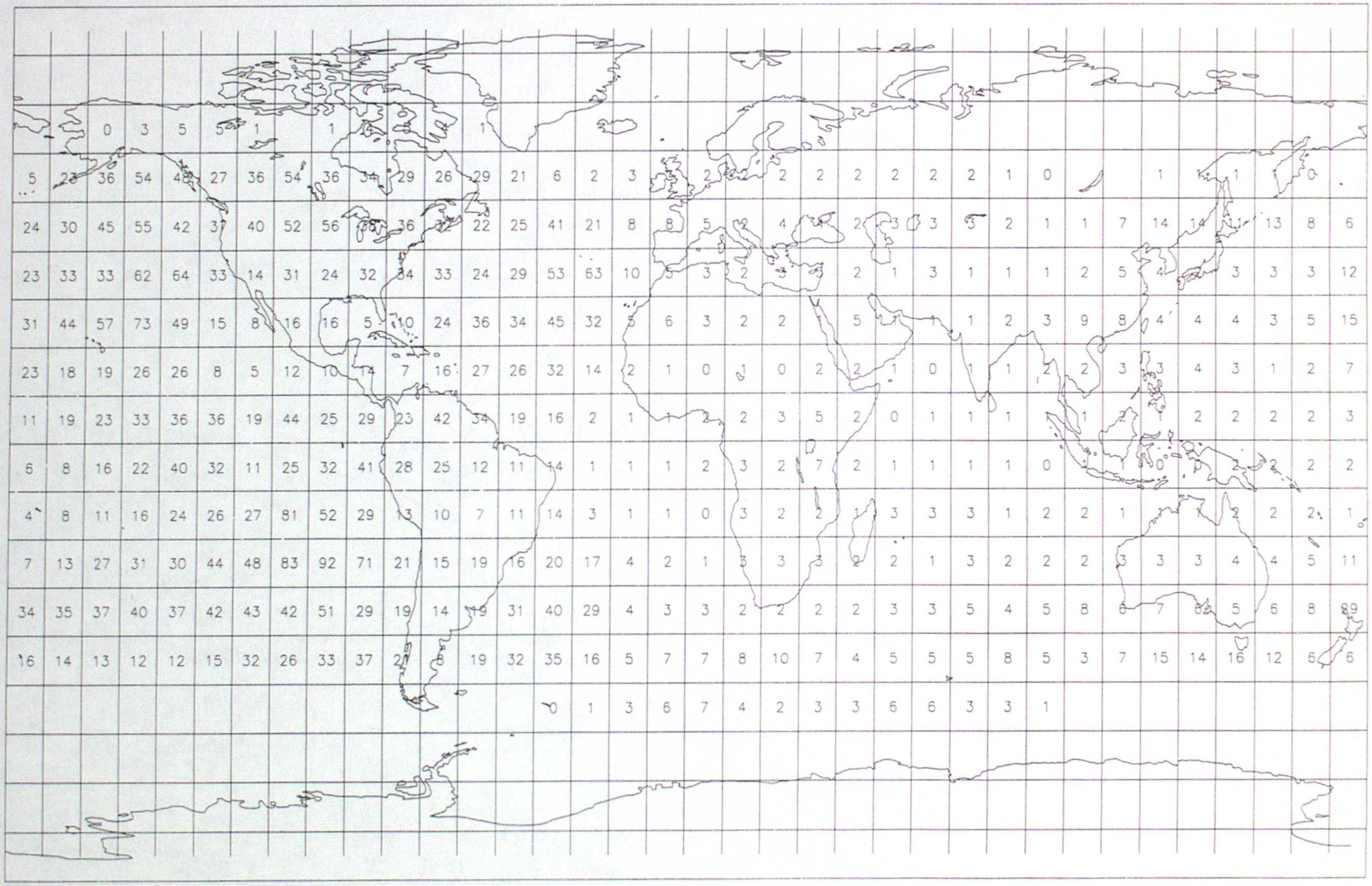
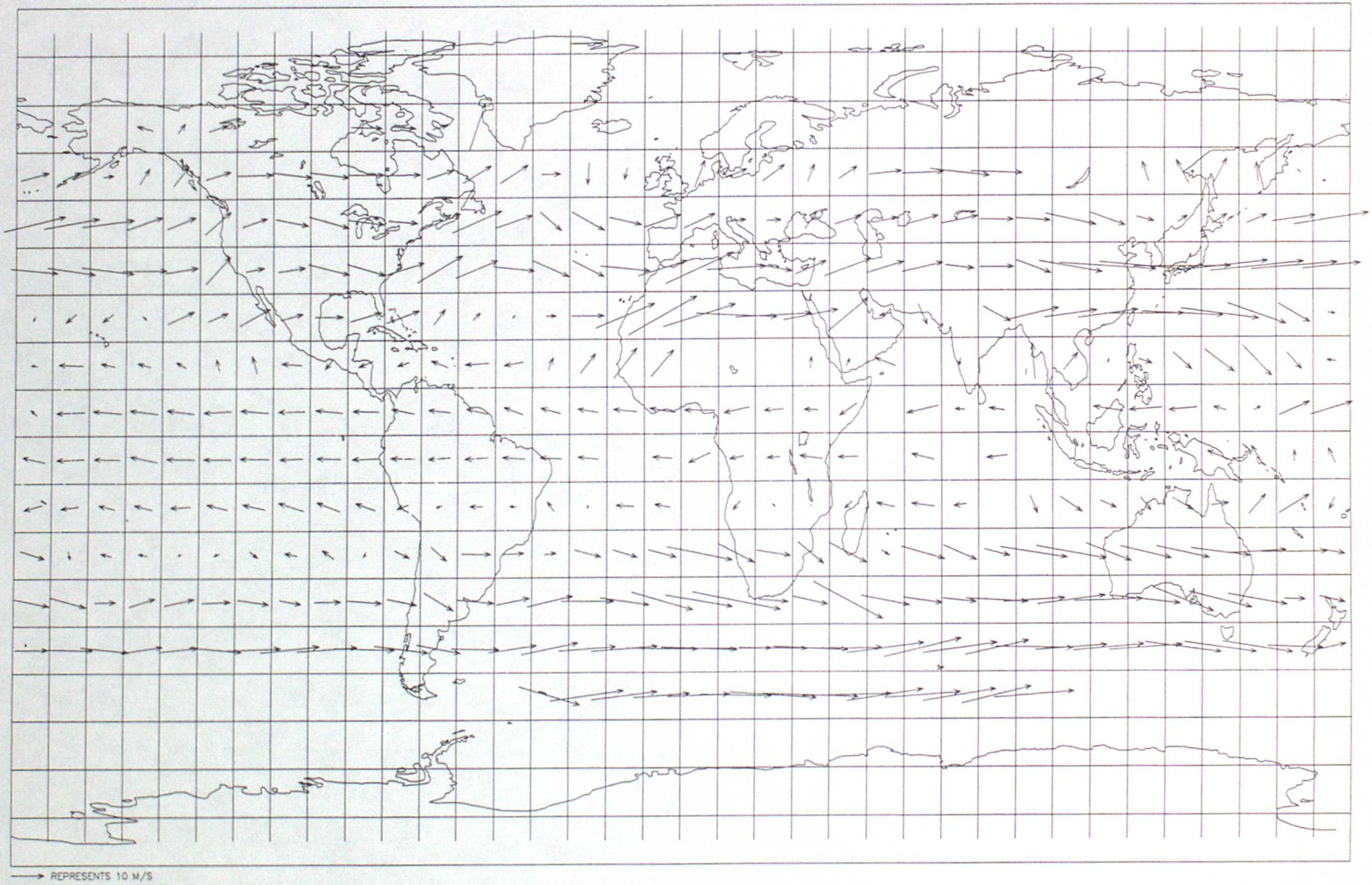

0 3 5 5 1 1 4 3 4 1
5 23 36 54 48 27 36 54 36 34 29 26 29 21 6 2 3 2 2 2 2 2 2 2 2 1 0 1 1 1 1 0
24 30 45 55 42 37 40 52 56 38 36 32 22 25 41 21 8 8 5 2 4 4 2 3 3 3 2 1 1 7 14 14 11 13 8 6
23 33 33 62 64 33 14 31 24 32 34 33 24 29 53 63 10 5 3 2 3 5 2 1 3 1 1 1 2 5 4 3 3 3 12
31 44 57 73 49 15 8 16 16 5 10 24 36 34 45 32 5 6 3 2 2 1 5 1 1 1 2 3 9 8 4 4 4 3 5 15
23 18 19 26 26 8 5 12 10 14 7 16 27 26 32 14 2 1 0 1 0 2 2 1 0 1 1 2 2 3 3 4 3 1 2 7
11 19 23 33 36 36 19 44 25 29 23 42 34 19 16 2 1 1 2 2 3 5 2 0 1 1 1 1 1 2 1 2 2 2 2 3
6 8 16 22 40 32 11 25 32 41 28 25 12 11 14 1 1 1 2 3 2 7 2 1 1 1 1 0 1 1 0 0 2 2 2 2
4 8 11 16 24 26 27 81 52 29 13 10 7 11 14 3 1 1 0 3 2 2 1 3 3 3 1 2 2 1 1 1 2 2 2 1
7 13 27 31 30 44 48 83 92 71 21 15 19 16 20 17 4 2 1 3 3 3 2 2 1 3 2 2 2 3 3 3 4 4 5 11
34 35 37 40 37 42 43 42 51 29 19 14 19 31 40 29 4 3 3 2 2 2 2 3 3 5 4 5 8 6 7 6 5 6 8 9
16 14 13 12 12 15 32 26 33 37 21 8 19 32 35 16 5 7 7 8 10 7 4 5 5 5 8 5 3 7 15 14 16 12 6 6
0 1 3 6 7 4 2 3 3 6 6 3 3 1

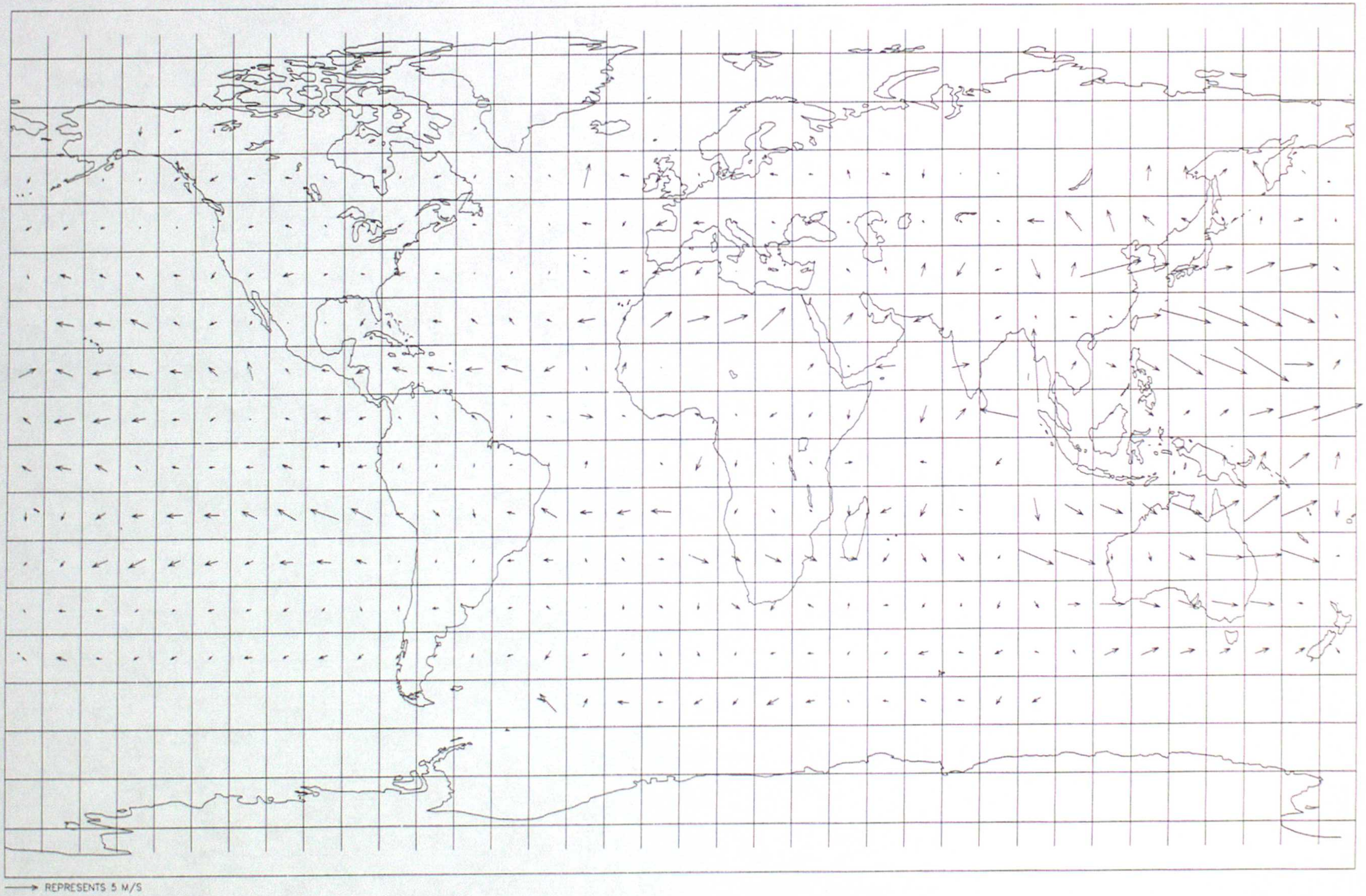
FIGURE 16

SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
APRIL 2000
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

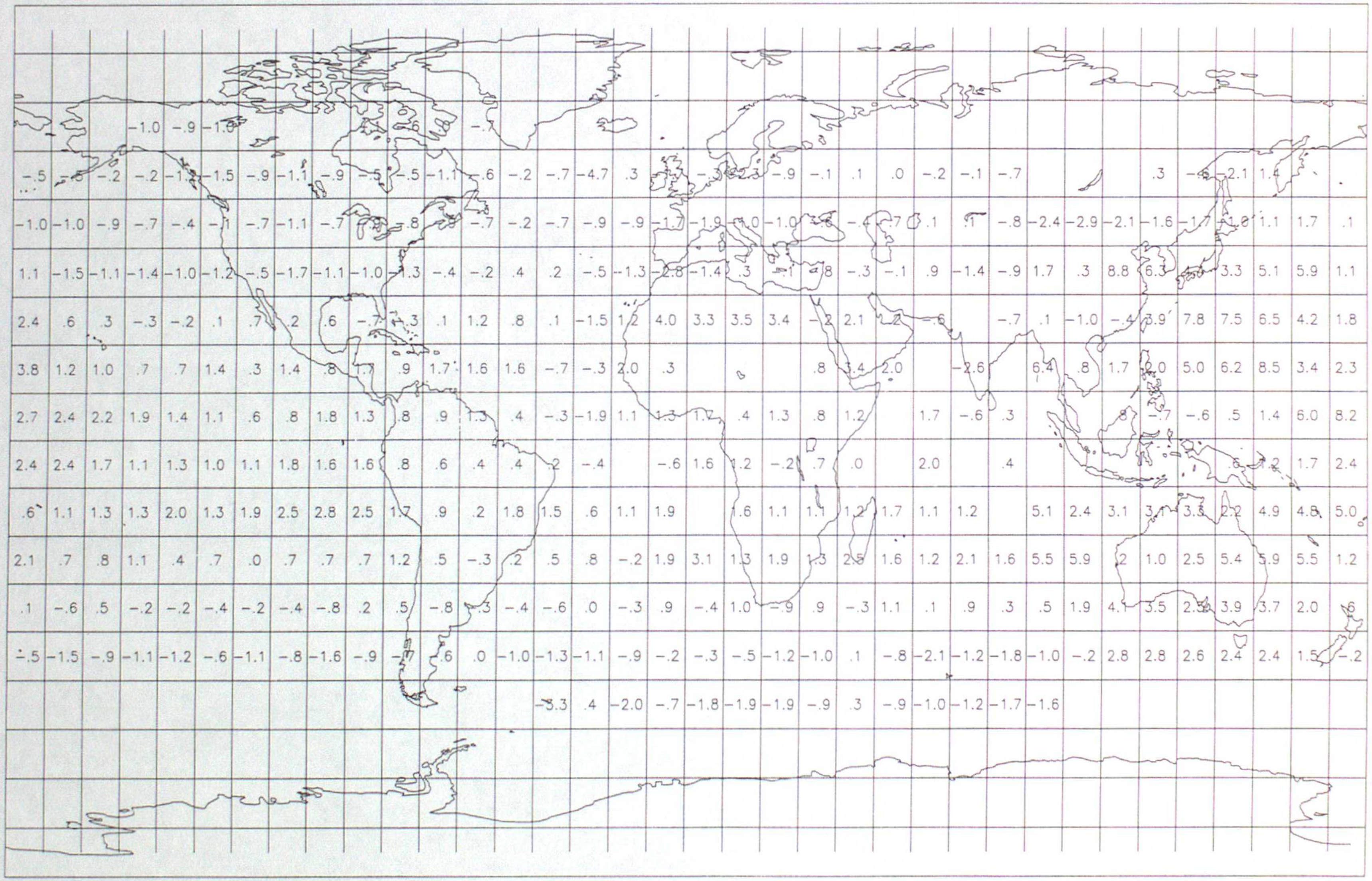

REPRESENTS 10 M/S

SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 401-700 HPA
APRIL 2000
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

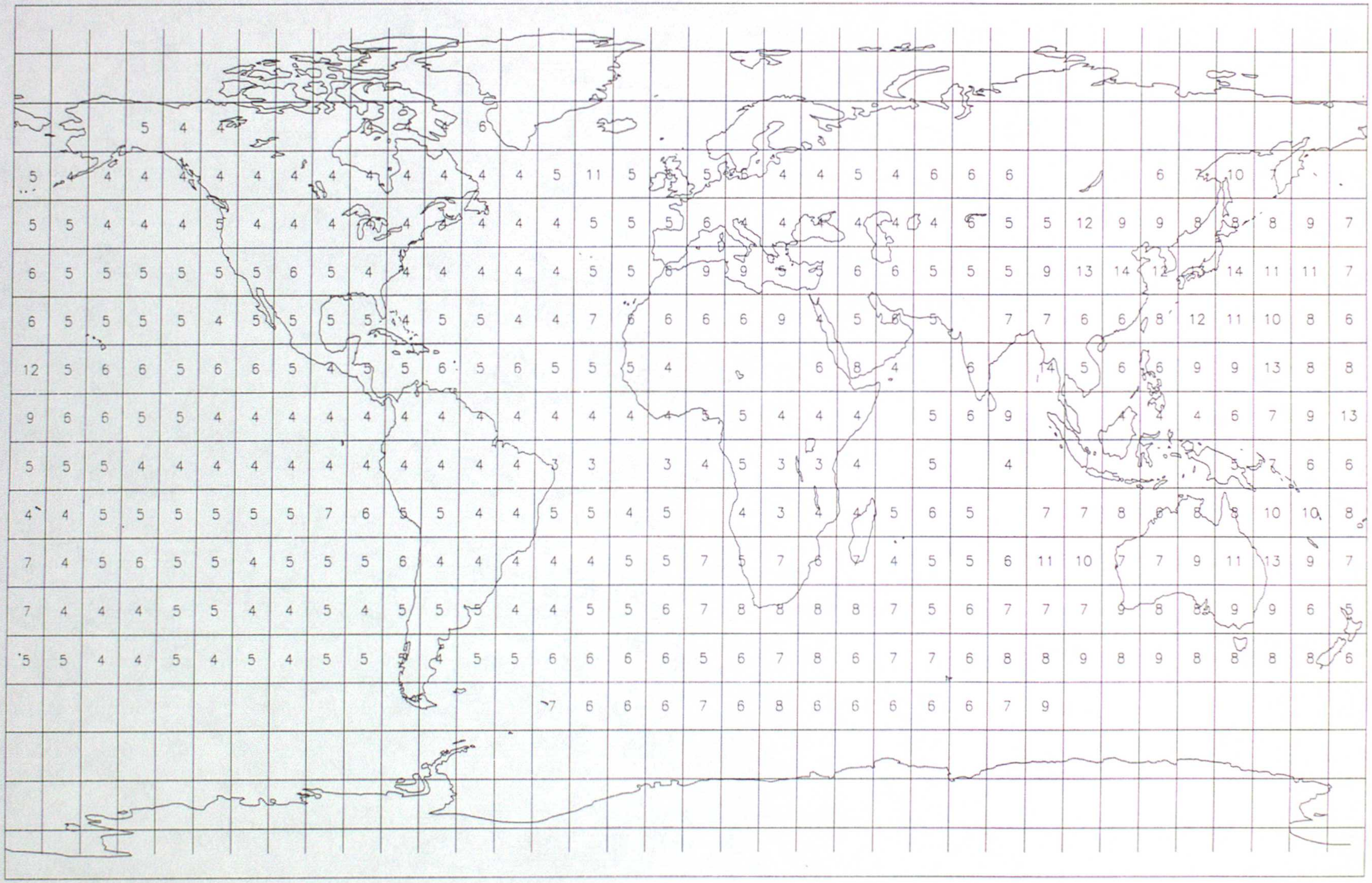
FIGURE 17


REPRESENTS 5 M/S

SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
APRIL 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

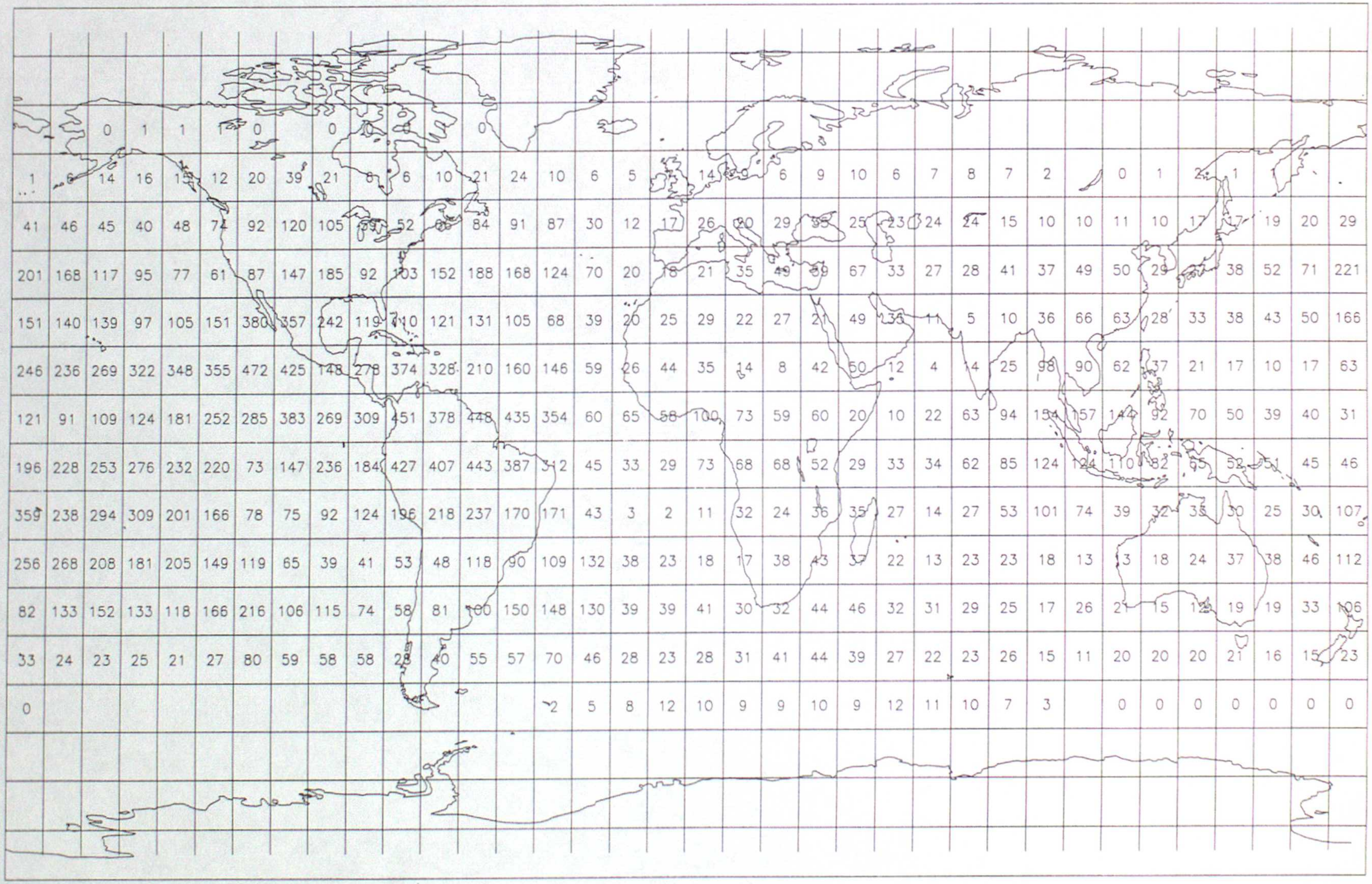

-1.0 -.9 -1.0 -.7
-.5 -.6 -.2 -.2 -1.2 -1.5 -.9 -1.1 -.9 -.5 -.5 -1.1 .6 -.2 -.7 -4.7 .3 -.3 2.3 -.9 -.1 .1 .0 -.2 -.1 -.7 .3 -.8 2.1 1.4
-1.0 -1.0 -.9 -.7 -.4 -.1 -.7 -1.1 -.7 -.9 -.8 -.5 -.7 -.2 -.7 -.9 -.9 -1.7 -1.9 -1.0 -1.0 -.6 -.4 -.7 .1 .1 -.8 -2.4 -2.9 -2.1 -1.6 -1.7 -1.0 1.1 1.7 .1
1.1 -1.5 -1.1 -1.4 -1.0 -1.2 -.5 -1.7 -1.1 -1.0 -1.3 -.4 -.2 .4 .2 -.5 -1.3 -2.8 -1.4 .3 -.1 -.8 -.3 -.1 .9 -1.4 -.9 1.7 .3 8.8 6.3 -.5 3.3 5.1 5.9 1.1
2.4 .6 .3 -.3 -.2 .1 .7 .2 .6 -.7 -.3 .1 1.2 .8 .1 -1.5 1.2 4.0 3.3 3.5 3.4 -.2 2.1 .2 -.6 -.7 .1 -1.0 -.4 3.9 7.8 7.5 6.5 4.2 1.8
3.8 1.2 1.0 .7 .7 1.4 .3 1.4 .8 1.7 .9 1.7 1.6 1.6 -.7 -.3 2.0 .3 .8 3.4 2.0 -2.6 6.4 .8 1.7 2.0 5.0 6.2 8.5 3.4 2.3
2.7 2.4 2.2 1.9 1.4 1.1 .6 .8 1.8 1.3 .8 .9 1.3 .4 -.3 -1.9 1.1 1.3 1.7 .4 1.3 .8 1.2 1.7 -.6 .3 .8 -.7 -.6 .5 1.4 6.0 8.2
2.4 2.4 1.7 1.1 1.3 1.0 1.1 1.8 1.6 1.6 .8 .6 .4 .4 .2 -.4 -.6 1.6 1.2 -.2 .7 .0 2.0 .4 .6 .2 1.7 2.4
.6 1.1 1.3 1.3 2.0 1.3 1.9 2.5 2.8 2.5 1.7 .9 .2 1.8 1.5 .6 1.1 1.9 1.6 1.1 1.1 1.2 1.7 1.1 1.2 5.1 2.4 3.1 3.1 3.3 2.2 4.9 4.8 5.0
2.1 .7 .8 1.1 .4 .7 .0 .7 .7 .7 1.2 .5 -.3 .2 .5 .8 -.2 1.9 3.1 1.3 1.9 1.3 2.5 1.6 1.2 2.1 1.6 5.5 5.9 .2 1.0 2.5 5.4 5.9 5.5 1.2
.1 -.6 .5 -.2 -.2 -.4 -.2 -.4 -.8 .2 .5 -.8 .3 -.4 -.6 .0 -.3 .9 -.4 1.0 -.9 .9 -.3 1.1 .1 .9 .3 .5 1.9 4.1 3.5 2.5 3.9 3.7 2.0 .6
-.5 -1.5 -.9 -1.1 -1.2 -.6 -1.1 -.8 -1.6 -.9 -.7 -.6 .0 -1.0 -1.3 -1.1 -.9 -.2 -.3 -.5 -1.2 -1.0 .1 -.8 -2.1 -1.2 -1.8 -1.0 -.2 2.8 2.8 2.6 2.4 2.4 1.5 -.2
-3.3 .4 -2.0 -.7 -1.8 -1.9 -1.9 -.9 .3 -.9 -1.0 -1.2 -1.7 -1.6

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19
APRIL 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


5 4 4 6
5 4 4 4 4 4 4 4 4 4 4 4 4 4 5 11 5 6 5 6 4 4 5 4 6 6 6 6 7 10 7
5 5 4 4 4 5 4 4 4 4 4 4 4 4 4 5 5 5 6 4 4 4 4 4 4 6 5 5 12 9 9 8 8 8 9 7
6 5 5 5 5 5 5 6 5 4 4 4 4 4 4 5 5 6 9 9 5 5 6 6 5 5 5 9 13 14 12 14 11 11 7
6 5 5 5 5 4 5 5 5 5 4 5 5 4 4 7 6 6 6 6 9 4 5 6 5 7 7 6 6 8 12 11 10 8 6
12 5 6 6 5 6 6 5 4 5 5 6 5 6 5 5 5 4 6 8 4 6 14 5 6 6 9 9 13 8 8
9 6 6 5 5 4 4 4 4 4 4 4 4 4 4 4 4 4 3 5 4 4 4 5 6 9 4 4 4 6 7 9 13
5 5 5 4 4 4 4 4 4 4 4 4 4 4 3 3 3 4 5 3 3 4 5 4 5 7 6 6
4 4 5 5 5 5 5 5 7 6 5 5 4 4 5 5 4 5 4 3 4 4 5 6 5 7 7 8 8 8 8 10 10 8
7 4 5 6 5 5 4 5 5 5 6 4 4 4 4 4 5 5 7 5 7 6 7 4 5 5 6 11 10 7 7 9 11 13 9 7
7 4 4 4 5 5 4 4 5 4 5 5 5 4 4 5 5 6 7 8 8 8 8 7 5 6 7 7 7 9 8 8 9 9 6 5
5 5 4 4 5 4 5 4 5 5 5 4 5 5 6 6 6 6 5 6 7 8 6 7 7 6 8 8 9 8 9 8 8 8 8 6
7 6 6 6 7 6 8 6 6 6 6 6 7 9

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
APRIL 2000

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 34418



		0	1	1	1	0		0	0	0		0																							
1	6	14	16	15	12	20	39	21	8	6	10	21	24	10	6	5	7	14	29	6	9	10	6	7	8	7	2		0	1	2	1	1		
41	46	45	40	48	74	92	120	105	59	52	66	84	91	87	30	12	17	26	20	29	35	25	23	24	24	15	10	10	11	10	17	17	19	20	29
201	168	117	95	77	61	87	147	185	92	103	152	188	168	124	70	20	18	21	35	49	39	67	33	27	28	41	37	49	50	29	27	38	52	71	221
151	140	139	97	105	151	380	357	242	119	110	121	131	105	68	39	20	25	29	22	27	21	49	35	11	5	10	36	66	63	28	33	38	43	50	166
246	236	269	322	348	355	472	425	148	278	374	328	210	160	146	59	26	44	35	14	8	42	50	12	4	14	25	98	90	62	37	21	17	10	17	63
121	91	109	124	181	252	285	383	269	309	451	378	448	435	354	60	65	58	100	73	59	60	20	10	22	63	94	154	157	144	92	70	50	39	40	31
196	228	253	276	232	220	73	147	236	184	427	407	443	387	312	45	33	29	73	68	68	52	29	33	34	62	85	124	124	110	82	65	52	51	45	46
359	238	294	309	201	166	78	75	92	124	196	218	237	170	171	43	3	2	11	32	24	36	35	27	14	27	53	101	74	39	32	35	30	25	30	107
256	268	208	181	205	149	119	65	39	41	53	48	118	90	109	132	38	23	18	17	38	43	37	22	13	23	23	18	13	13	18	24	37	38	46	112
82	133	152	133	118	166	216	106	115	74	58	81	100	150	148	130	39	39	41	30	32	44	46	32	31	29	25	17	26	21	15	12	19	19	33	106
33	24	23	25	21	27	80	59	58	58	28	40	55	57	70	46	28	23	28	31	41	44	39	27	22	23	26	15	11	20	20	20	21	16	15	23
0														2	5	8	12	10	9	9	10	9	12	11	10	7	3		0	0	0	0	0	0	0

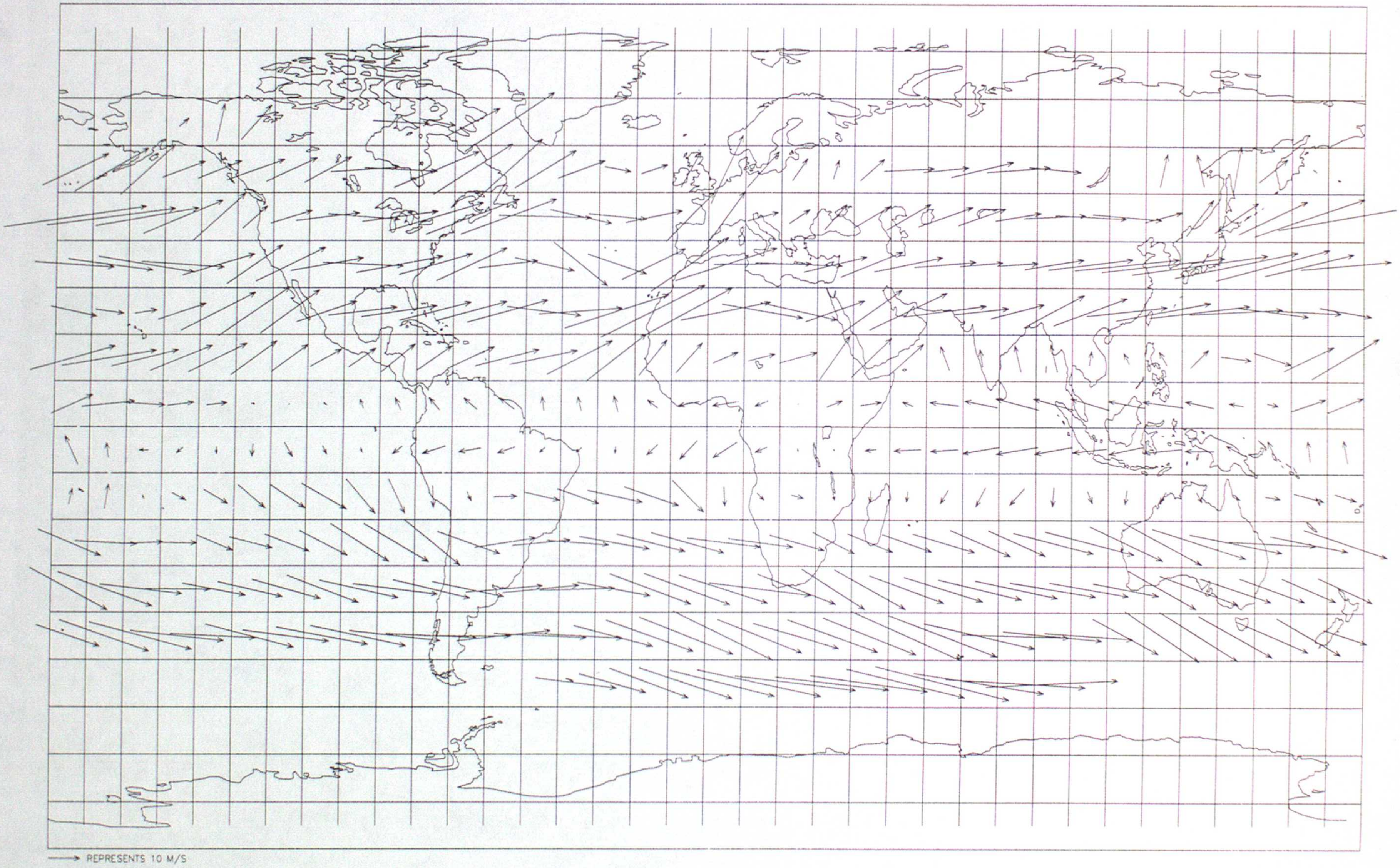
SATOB METEOSAT W/V VECTOR MEAN WINDS BETWEEN 101–400 HPA

FIGURE 21

APRIL 2000

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


→ REPRESENTS 10 M/S

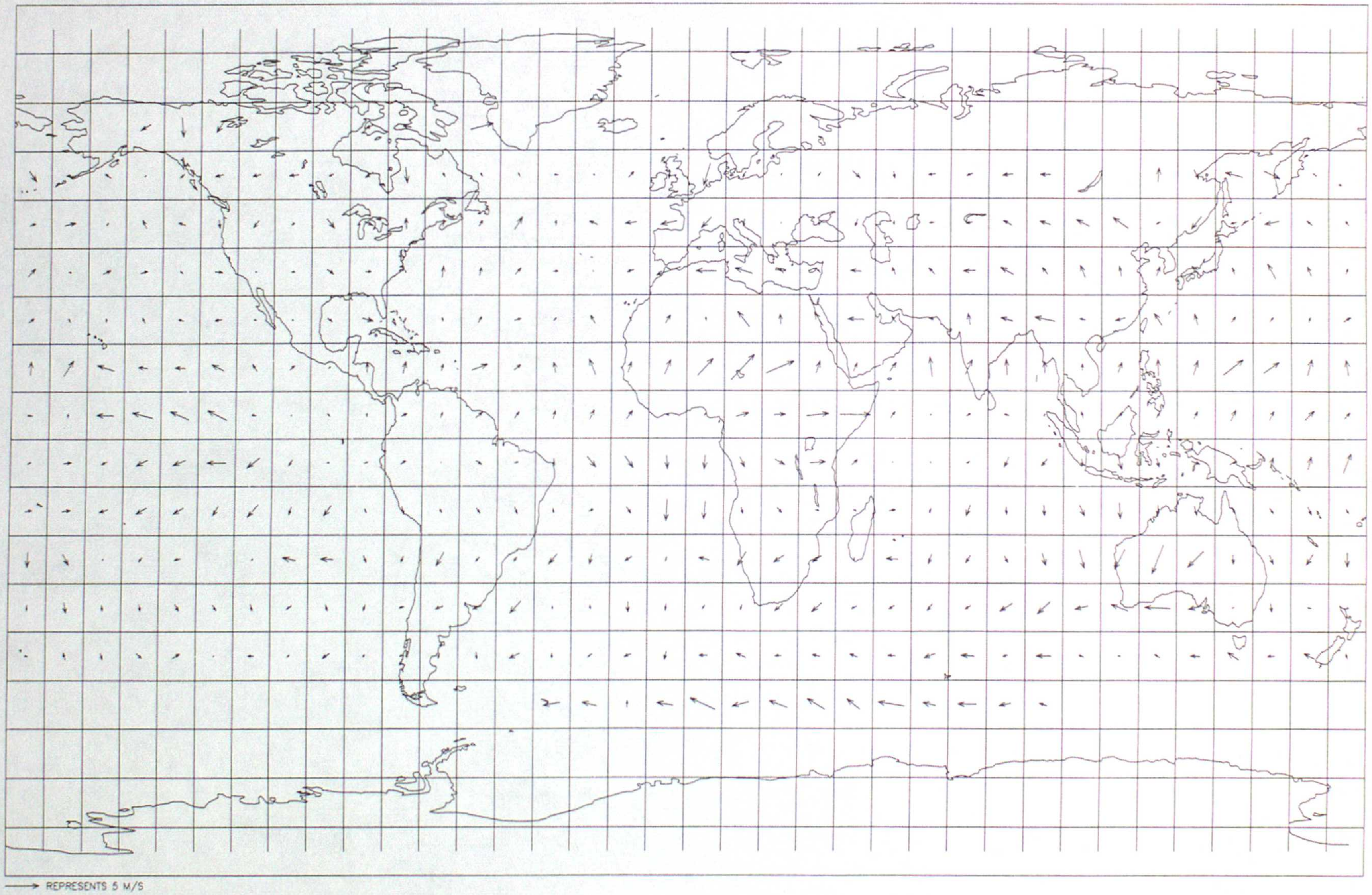
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 101-400 HPA

APRIL 2000

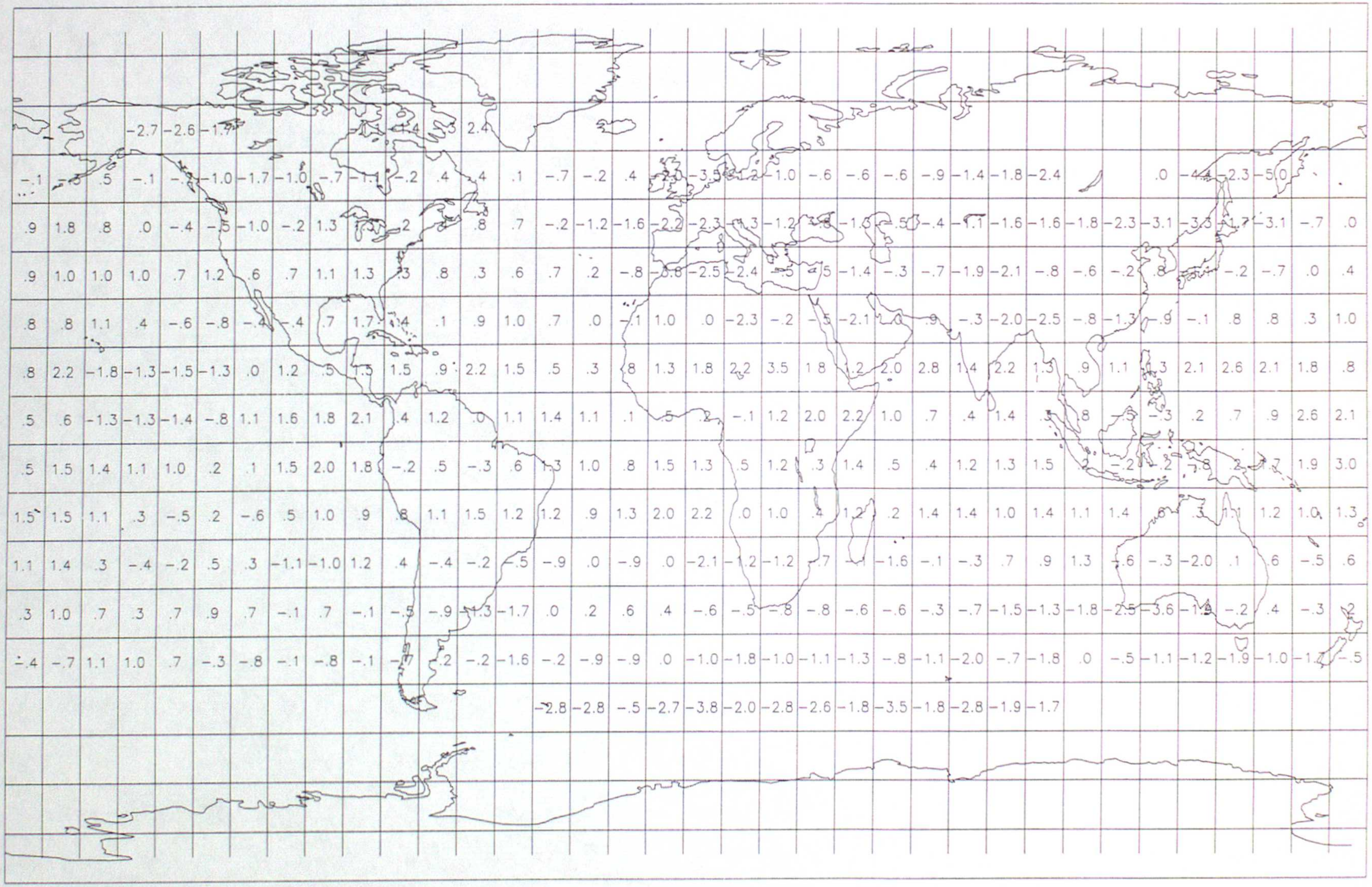
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

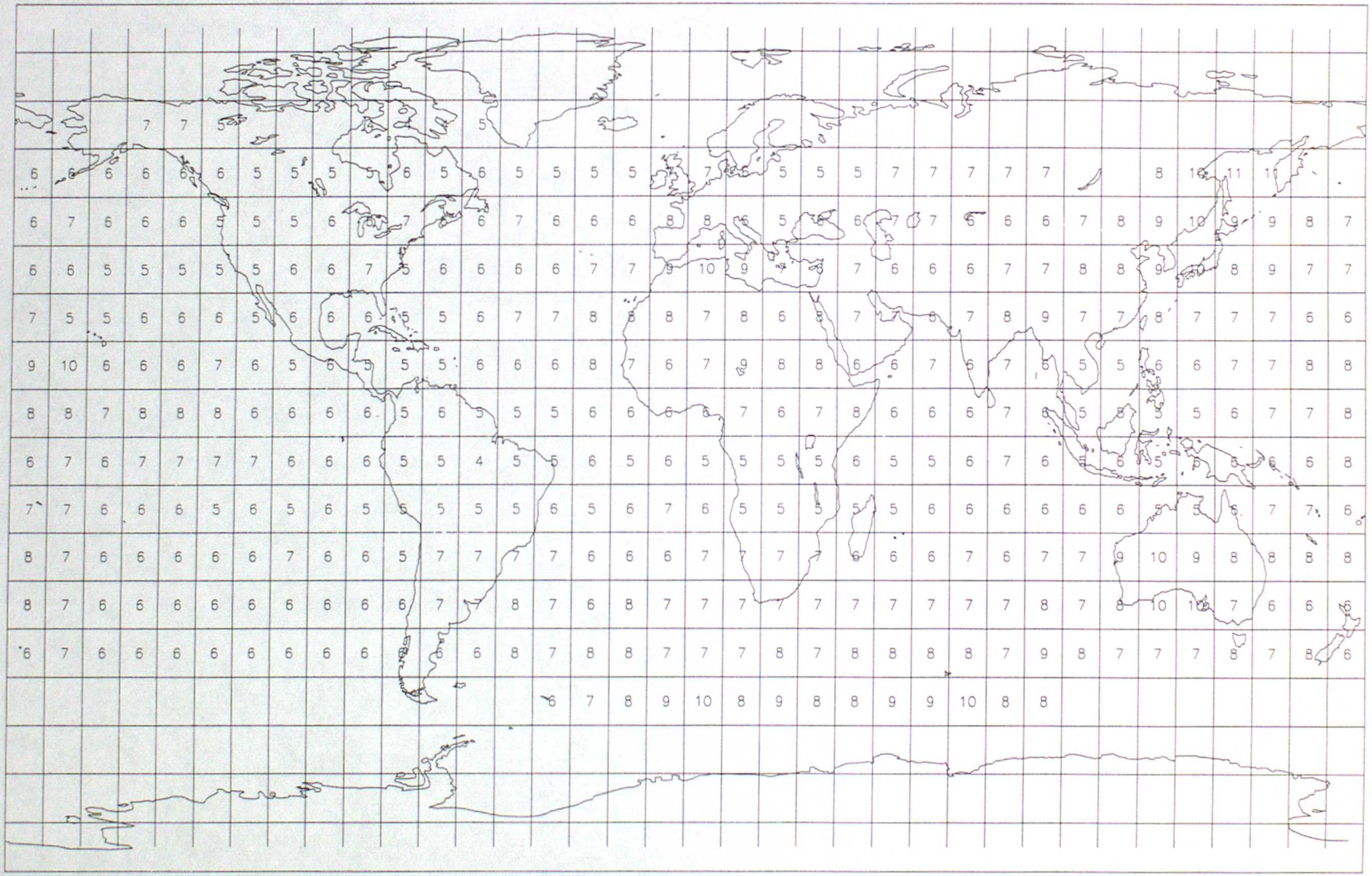
FIGURE 22


REPRESENTS 5 M/S

SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
APRIL 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-2.7 -2.6 -1.7 -1.1 -1.4 .3 2.4
-.1 -.3 .5 -.1 -1.0 -1.7 -1.0 -.7 -1.1 -.2 .4 .4 .1 -.7 -.2 .4 -2.0 -3.5 -1.2 -1.0 -.6 -.6 -.6 -.9 -1.4 -1.8 -2.4 .0 -4.4 -2.3 -5.0
.9 1.8 .8 .0 -.4 -.5 -1.0 -.2 1.3 1.3 .2 .8 .7 -.2 -1.2 -1.6 -2.2 -2.3 -1.3 -1.2 -1.8 -1.3 -.5 -.4 -1.1 -1.6 -1.6 -1.8 -2.3 -3.1 -3.3 -1.7 -3.1 -.7 .0
.9 1.0 1.0 1.0 .7 1.2 .6 .7 1.1 1.3 .3 .8 .3 .6 .7 .2 -.8 -3.8 -2.5 -2.4 -.5 .5 -1.4 -.3 -.7 -1.9 -2.1 -.8 -.6 -.2 .8 -.2 -.7 .0 .4
.8 .8 1.1 .4 -.6 -.8 -.4 -.4 .7 1.7 .4 .1 .9 1.0 .7 .0 -.1 1.0 .0 -2.3 -.2 -.5 -2.1 1.0 .9 -.3 -2.0 -2.5 -.8 -1.3 -.9 -.1 .8 .8 .3 1.0
.8 2.2 -1.8 -1.3 -1.5 -1.3 .0 1.2 .5 1.5 1.5 .9 2.2 1.5 .5 .3 .8 1.3 1.8 2.2 3.5 1.8 1.2 2.0 2.8 1.4 2.2 1.3 .9 1.1 1.3 2.1 2.6 2.1 1.8 .8
.5 .6 -1.3 -1.3 -1.4 -.8 1.1 1.6 1.8 2.1 .4 1.2 .0 1.1 1.4 1.1 .1 .5 .2 -.1 1.2 2.0 2.2 1.0 .7 .4 1.4 .3 .8 -.5 -.3 .2 .7 .9 2.6 2.1
.5 1.5 1.4 1.1 1.0 .2 .1 1.5 2.0 1.8 -.2 .5 -.3 .6 1.3 1.0 .8 1.5 1.3 .5 1.2 .3 1.4 .5 .4 1.2 1.3 1.5 .2 -.2 -.2 -.8 .2 1.7 1.9 3.0
1.5 1.5 1.1 .3 -.5 .2 -.6 .5 1.0 .9 .8 1.1 1.5 1.2 1.2 .9 1.3 2.0 2.2 .0 1.0 .4 1.2 .2 1.4 1.4 1.0 1.4 1.1 1.4 .6 .3 1.1 1.2 1.0 1.3
1.1 1.4 .3 -.4 -.2 .5 .3 -1.1 -1.0 1.2 .4 -.4 -.2 -.5 -.9 .0 -.9 .0 -2.1 -1.2 -1.2 -.7 -.1 -1.6 -.1 -.3 .7 .9 1.3 -.6 -.3 -2.0 .1 .6 -.5 .6
.3 1.0 .7 .3 .7 .9 .7 -.1 .7 -.1 -.5 -.9 -1.3 -1.7 .0 .2 .6 .4 -.6 -.5 -.8 -.8 -.6 -.6 -.3 -.7 -1.5 -1.3 -1.8 -2.5 -3.6 -1.9 -.2 .4 -.3 .2
-.4 -.7 1.1 1.0 .7 -.3 -.8 -.1 -.8 -.1 -.7 -.2 -.2 -1.6 -.2 -.9 -.9 .0 -1.0 -1.8 -1.0 -1.1 -1.3 -.8 -1.1 -2.0 -.7 -1.8 .0 -.5 -1.1 -1.2 -1.9 -1.0 -1.2 -.5
-2.8 -2.8 -.5 -2.7 -3.8 -2.0 -2.8 -2.6 -1.8 -3.5 -1.8 -2.8 -1.9 -1.7

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
APRIL 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


7 7 5 5
6 6 6 6 6 6 5 5 5 5 6 5 6 5 5 5 5 7 5 5 5 5 7 7 7 7 7 8 10 11 11
6 7 6 6 6 5 5 5 6 7 6 7 6 6 6 8 8 6 5 6 6 7 7 6 6 6 7 8 9 10 9 9 8 7
6 6 5 5 5 5 5 6 6 7 5 6 6 6 6 7 7 9 10 9 7 6 7 6 6 6 7 7 8 8 9 8 9 7 7
7 5 5 6 6 6 5 6 6 6 5 5 6 7 7 8 8 8 7 8 6 8 7 7 6 7 8 9 7 7 8 7 7 7 6 6
9 10 6 6 6 7 6 5 6 5 5 5 6 6 6 8 7 6 7 9 8 8 6 6 7 6 7 6 5 5 6 6 7 7 8 8
8 8 7 8 8 8 6 6 6 6 5 6 5 5 5 6 6 6 6 7 6 7 8 6 6 6 7 8 5 8 5 5 6 7 7 8
6 7 6 7 7 7 7 6 6 6 5 5 4 5 5 6 5 6 5 5 5 5 6 5 5 6 7 6 5 6 5 5 6 6 6 8
7 7 6 6 6 5 6 5 6 5 5 5 5 5 6 5 6 7 6 5 5 5 5 5 6 6 6 6 6 6 5 5 6 7 7 6
8 7 6 6 6 6 6 7 6 6 5 7 7 7 7 6 6 6 7 7 7 7 6 6 6 7 6 7 7 9 10 9 8 8 8 8
8 7 6 6 6 6 6 6 6 6 6 7 7 8 7 6 8 7 7 7 7 7 7 7 7 7 7 8 7 8 10 10 7 6 6 6
6 7 6 6 6 6 6 6 6 6 6 6 6 8 7 8 8 7 7 7 8 7 8 8 8 8 7 9 8 7 7 7 8 7 8 6
6 7 8 9 10 8 9 8 8 9 9 10 8 8

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: APRIL 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15.

Standard of comparison :Background field from UKMO global model.

Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)

- HIRS8 (Surface)
- HIRS15 (700)
- HIRS11 (500-700)
- HIRS4 (400)
- AMSUA5 (700)
- AMSUA7 (300)
- AMSUA9 (100)

:Mean and standard deviation observation-minus-background brightness temperature differences

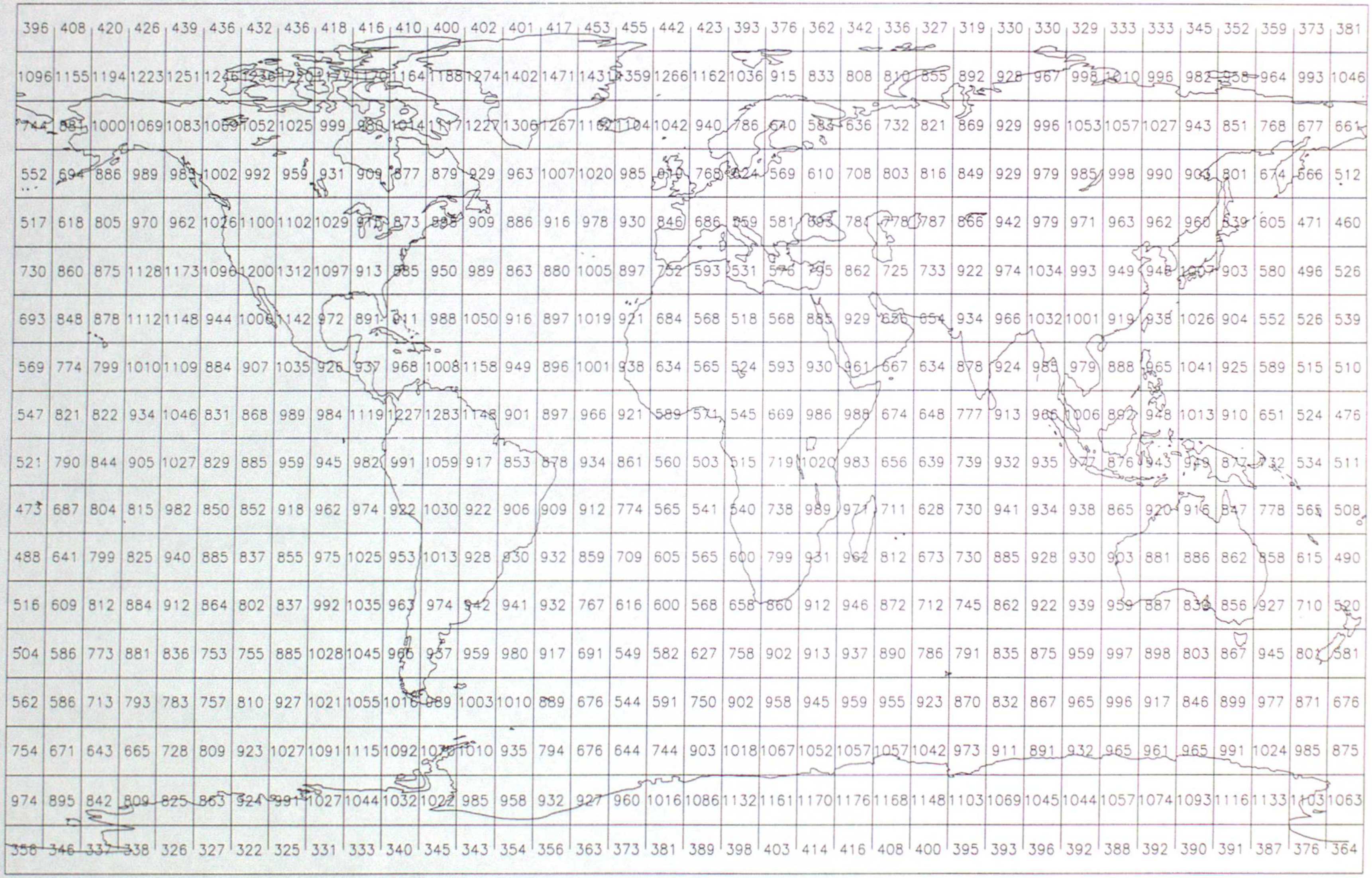
ATOVS : MEAN DAILY NUMBER OF OBSERVATIONS

FIGURE 25

APRIL 2000

NOAA-15, USING ALL OBSERVATIONS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 535206



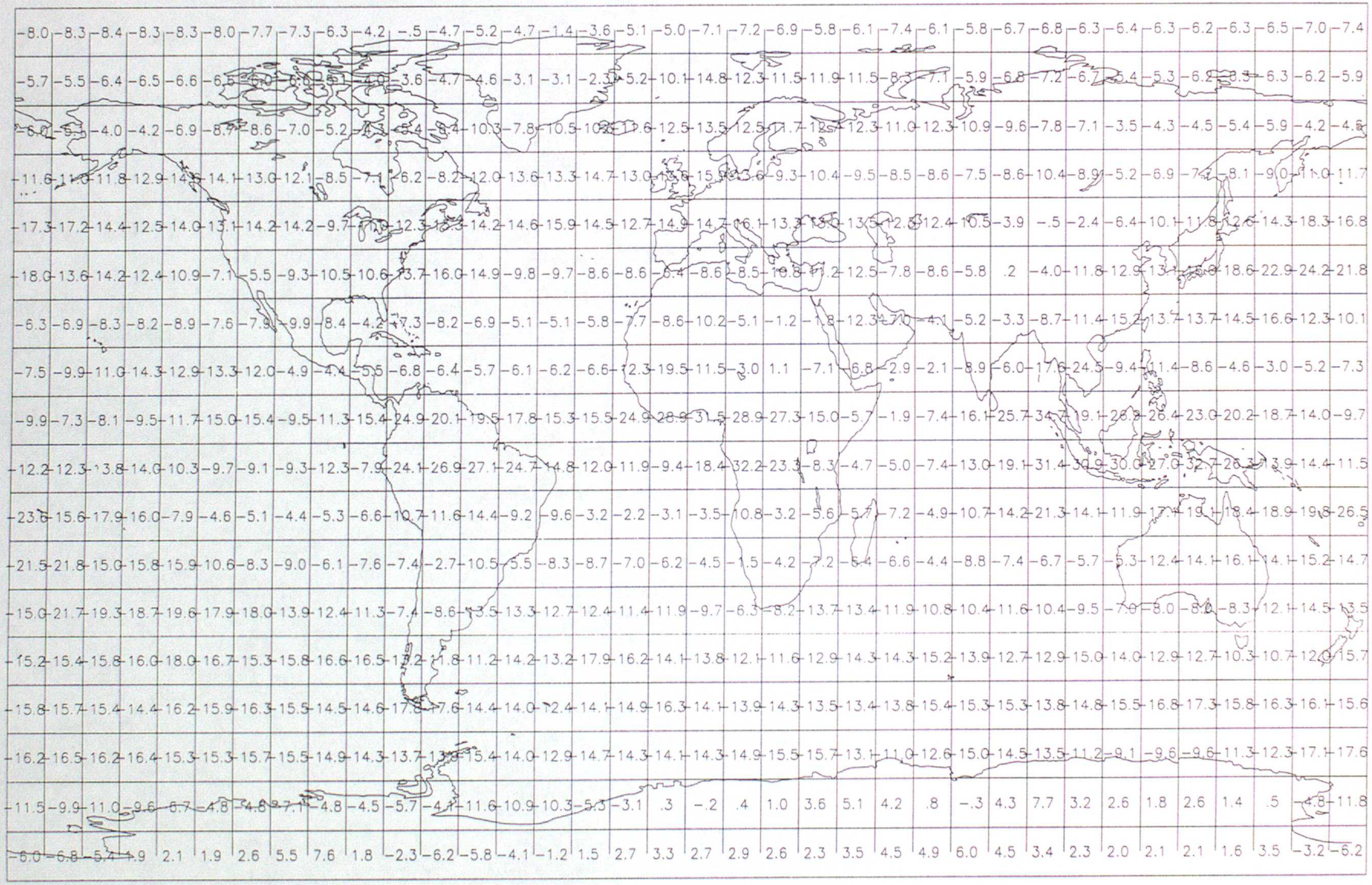
396	408	420	426	439	436	432	436	418	416	410	400	402	401	417	453	455	442	423	393	376	362	342	336	327	319	330	330	329	333	333	345	352	359	373	381
1096	1155	1194	1223	1251	1246	1236	1220	1177	1170	1164	1188	1274	1402	1471	1431	1359	1266	1162	1036	915	833	808	810	855	892	928	967	998	1010	996	982	958	964	993	1046
744	881	1000	1069	1083	1069	1052	1025	999	980	1014	1117	1227	1306	1267	1162	1104	1042	940	786	640	583	636	732	821	869	929	996	1053	1057	1027	943	851	768	677	661
552	694	886	989	983	1002	992	959	931	909	877	879	929	963	1007	1020	985	810	768	824	569	610	708	803	816	849	929	979	985	998	990	903	801	674	566	512
517	618	805	970	962	1026	1100	1102	1029	915	873	888	909	886	916	978	930	846	686	559	581	693	784	778	787	866	942	979	971	963	962	960	539	605	471	460
730	860	875	1128	1173	1096	1200	1312	1097	913	885	950	989	863	880	1005	897	752	593	531	576	795	862	725	733	922	974	1034	993	949	948	1007	903	580	496	526
693	848	878	1112	1148	944	1006	1142	972	891	911	988	1050	916	897	1019	921	684	568	518	568	885	929	656	654	934	966	1032	1001	919	938	1026	904	552	526	539
569	774	799	1010	1109	884	907	1035	926	937	968	1008	1158	949	896	1001	938	634	565	524	593	930	961	667	634	878	924	985	979	888	965	1041	925	589	515	510
547	821	822	934	1046	831	868	989	984	1119	1227	1283	1148	901	897	966	921	589	571	545	669	986	988	674	648	777	913	965	1006	892	948	1013	910	651	524	476
521	790	844	905	1027	829	885	959	945	982	991	1059	917	853	878	934	861	560	503	515	719	1020	983	656	639	739	932	935	977	876	943	949	877	732	534	511
473	687	804	815	982	850	852	918	962	974	922	1030	922	906	909	912	774	565	541	540	738	989	971	711	628	730	941	934	938	865	920	916	847	778	565	508
488	641	799	825	940	885	837	855	975	1025	953	1013	928	930	932	859	709	605	565	600	799	931	962	812	673	730	885	928	930	903	881	886	862	858	615	490
516	609	812	884	912	864	802	837	992	1035	963	974	942	941	932	767	616	600	568	658	860	912	946	872	712	745	862	922	939	959	887	838	856	927	710	520
504	586	773	881	836	753	755	885	1028	1045	966	937	959	980	917	691	549	582	627	758	902	913	937	890	786	791	835	875	959	997	898	803	867	945	801	581
562	586	713	793	783	757	810	927	1021	1055	1016	889	1003	1010	889	676	544	591	750	902	958	945	959	955	923	870	832	867	965	996	917	846	899	977	871	676
754	671	643	665	728	809	923	1027	1091	1115	1092	1030	1010	935	794	676	644	744	903	1018	1067	1052	1057	1057	1042	973	911	891	932	965	961	965	991	1024	985	875
974	895	842	809	825	863	924	991	1027	1044	1032	1022	985	958	932	927	960	1016	1086	1132	1161	1170	1176	1168	1148	1103	1069	1045	1044	1057	1074	1093	1116	1133	1103	1063
358	346	337	338	326	327	322	325	331	333	340	345	343	354	356	363	373	381	389	398	403	414	416	408	400	395	393	396	392	388	392	390	391	387	376	364

ATOVS : MEAN O–B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)

APRIL 2000 : HIRS8 channel (Surface)

NOAA–15, USING ALL OBSERVATIONS

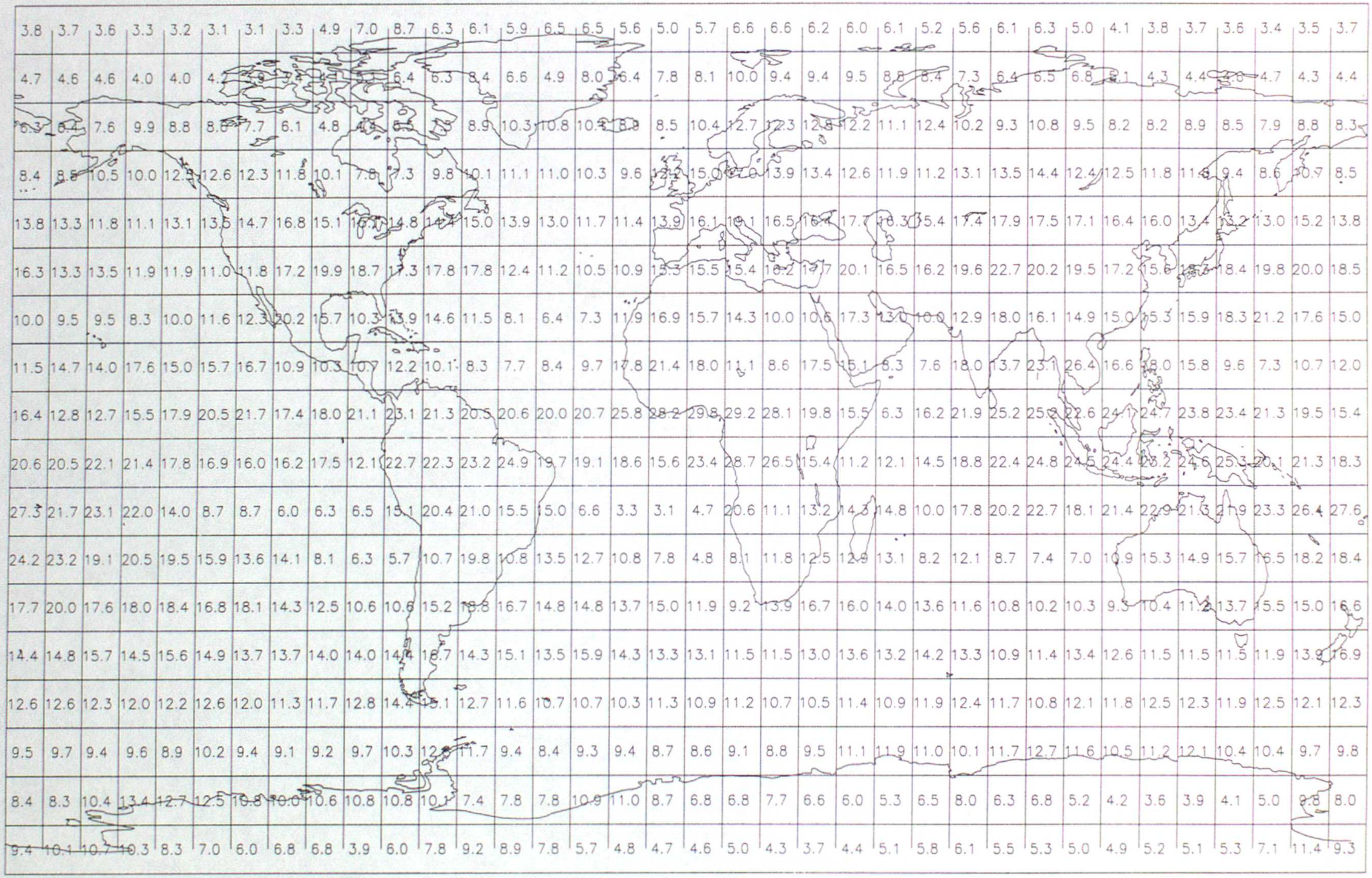
FIGURE 26



-8.0	-8.3	-8.4	-8.3	-8.3	-8.0	-7.7	-7.3	-6.3	-4.2	-.5	-4.7	-5.2	-4.7	-1.4	-3.6	-5.1	-5.0	-7.1	-7.2	-6.9	-5.8	-6.1	-7.4	-6.1	-5.8	-6.7	-6.8	-6.3	-6.4	-6.3	-6.2	-6.3	-6.5	-7.0	-7.4
-5.7	-5.5	-6.4	-6.5	-6.6	-6.5	-6.0	-6.6	-5.1	-4.0	-3.6	-4.7	-4.6	-3.1	-3.1	-2.3	-5.2	-10.1	-14.8	-12.3	-11.5	-11.9	-11.5	-8.3	-7.1	-5.9	-6.8	-7.2	-6.7	-5.4	-5.3	-6.2	-8.3	-6.3	-6.2	-5.9
-6.0	-5.1	-4.0	-4.2	-6.9	-8.7	-8.6	-7.0	-5.2	-4.3	-5.4	-8.4	-10.3	-7.8	-10.5	[illegible]	-11.6	-12.5	-13.5	-12.5	-11.7	-12.5	-12.3	-11.0	-12.3	-10.9	-9.6	-7.8	-7.1	-3.5	-4.3	-4.5	-5.4	-5.9	-4.2	-4.6
-11.6	-11.0	-11.8	-12.9	[illegible]	-14.1	-13.0	-12.1	-8.5	-7.1	-6.2	-8.2	-12.0	-13.6	-13.3	-14.7	-13.0	-13.6	-15.9	-13.6	-9.3	-10.4	-9.5	-8.5	-8.6	-7.5	-8.6	-10.4	-8.9	-5.2	-6.9	[illegible]	-8.1	-9.0	-11.0	-11.7
-17.3	-17.2	-14.4	-12.5	-14.0	-13.1	-14.2	-14.2	-9.7	[illegible]	-12.3	-13.3	-14.2	-14.6	-15.9	-14.5	-12.7	-14.9	-14.7	-16.1	-13.3	[illegible]	-13.5	[illegible]	-12.4	-10.5	-3.9	-.5	-2.4	-6.4	-10.1	-11.8	[illegible]	-14.3	-18.3	-16.8
-18.0	-13.6	-14.2	-12.4	-10.9	-7.1	-5.5	-9.3	-10.5	-10.6	-13.7	-16.0	-14.9	-9.8	-9.7	-8.6	-8.6	-6.4	-8.6	-8.5	-10.8	-11.2	-12.5	-7.8	-8.6	-5.8	.2	-4.0	-11.8	-12.9	-13.1	[illegible]	-18.6	-22.9	-24.2	-21.8
-6.3	-6.9	-8.3	-8.2	-8.9	-7.6	-7.9	-9.9	-8.4	-4.2	-7.3	-8.2	-6.9	-5.1	-5.1	-5.8	-7.7	-8.6	-10.2	-5.1	-1.2	-1.8	-12.3	-7.0	-4.1	-5.2	-3.3	-8.7	-11.4	-15.2	-13.7	-13.7	-14.5	-16.6	-12.3	-10.1
-7.5	-9.9	-11.0	-14.3	-12.9	-13.3	-12.0	-4.9	-4.4	-5.5	-6.8	-6.4	-5.7	-6.1	-6.2	-6.6	-12.3	-19.5	-11.5	-3.0	1.1	-7.1	-6.8	-2.9	-2.1	-8.9	-6.0	-17.6	-24.5	-9.4	-11.4	-8.6	-4.6	-3.0	-5.2	-7.3
-9.9	-7.3	-8.1	-9.5	-11.7	-15.0	-15.4	-9.5	-11.3	-15.4	-24.9	-20.1	-19.5	-17.8	-15.3	-15.5	-24.9	-28.9	-31.5	-28.9	-27.3	-15.0	-5.7	-1.9	-7.4	-16.1	-25.7	-34.7	-19.1	[illegible]	-26.4	-23.0	-20.2	-18.7	-14.0	-9.7
-12.2	-12.3	-13.8	-14.0	-10.3	-9.7	-9.1	-9.3	-12.3	-7.9	-24.1	-26.9	-27.1	-24.7	-14.8	-12.0	-11.9	-9.4	-18.4	-32.2	-23.3	-8.3	-4.7	-5.0	-7.4	-13.0	-19.1	-31.4	-30.9	-30.0	-27.0	-32.7	-26.3	-13.9	-14.4	-11.5
-23.6	-15.6	-17.9	-16.0	-7.9	-4.6	-5.1	-4.4	-5.3	-6.6	-10.7	-11.6	-14.4	-9.2	-9.6	-3.2	-2.2	-3.1	-3.5	-10.8	-3.2	-5.6	-5.7	-7.2	-4.9	-10.7	-14.2	-21.3	-14.1	-11.9	[illegible]	-19.1	-18.4	-18.9	-19.8	-26.5
-21.5	-21.8	-15.0	-15.8	-15.9	-10.6	-8.3	-9.0	-6.1	-7.6	-7.4	-2.7	-10.5	-5.5	-8.3	-8.7	-7.0	-6.2	-4.5	-1.5	-4.2	-7.2	-6.4	-6.6	-4.4	-8.8	-7.4	-6.7	-5.7	-5.3	-12.4	-14.1	-16.1	-14.1	-15.2	-14.7
-15.0	-21.7	-19.3	-18.7	-19.6	-17.9	-18.0	-13.9	-12.4	-11.3	-7.4	-8.6	-13.5	-13.3	-12.7	-12.4	-11.4	-11.9	-9.7	-6.3	-8.2	-13.7	-13.4	-11.9	-10.8	-10.4	-11.6	-10.4	-9.5	-7.0	-8.0	-8.0	-8.3	-12.1	-14.5	-13.5
-15.2	-15.4	-15.8	-16.0	-18.0	-16.7	-15.3	-15.8	-16.6	-16.5	-13.2	-11.8	-11.2	-14.2	-13.2	-17.9	-16.2	-14.1	-13.8	-12.1	-11.6	-12.9	-14.3	-14.3	-15.2	-13.9	-12.7	-12.9	-15.0	-14.0	-12.9	-12.7	-10.3	-10.7	-12.0	-15.7
-15.8	-15.7	-15.4	-14.4	-16.2	-15.9	-16.3	-15.5	-14.5	-14.6	-17.8	-17.6	-14.4	-14.0	-12.4	-14.1	-14.9	-16.3	-14.1	-13.9	-14.3	-13.5	-13.4	-13.8	-15.4	-15.3	-15.3	-13.8	-14.8	-15.5	-16.8	-17.3	-15.8	-16.3	-16.1	-15.6
-16.2	-16.5	-16.2	-16.4	-15.3	-15.3	-15.7	-15.5	-14.9	-14.3	-13.7	[illegible]	-15.4	-14.0	-12.9	-14.7	-14.3	-14.1	-14.3	-14.9	-15.5	-15.7	-13.1	-11.0	-12.6	-15.0	-14.5	-13.5	-11.2	-9.1	-9.6	-9.6	-11.3	-12.3	-17.1	-17.6
-11.5	-9.9	-11.0	-9.6	-6.7	-4.8	-4.8	-7.1	-4.8	-4.5	-5.7	-4.1	-11.6	-10.9	-10.3	-5.3	-3.1	.3	-.2	.4	1.0	3.6	5.1	4.2	.8	-.3	4.3	7.7	3.2	2.6	1.8	2.6	1.4	.5	-4.8	-11.8
-6.0	-6.8	-5.4	[illegible]	2.1	1.9	2.6	5.5	7.6	1.8	-2.3	-6.2	-5.8	-4.1	-1.2	1.5	2.7	3.3	2.7	2.9	2.6	2.3	3.5	4.5	4.9	6.0	4.5	3.4	2.3	2.0	2.1	2.1	1.6	3.5	-3.2	-6.2

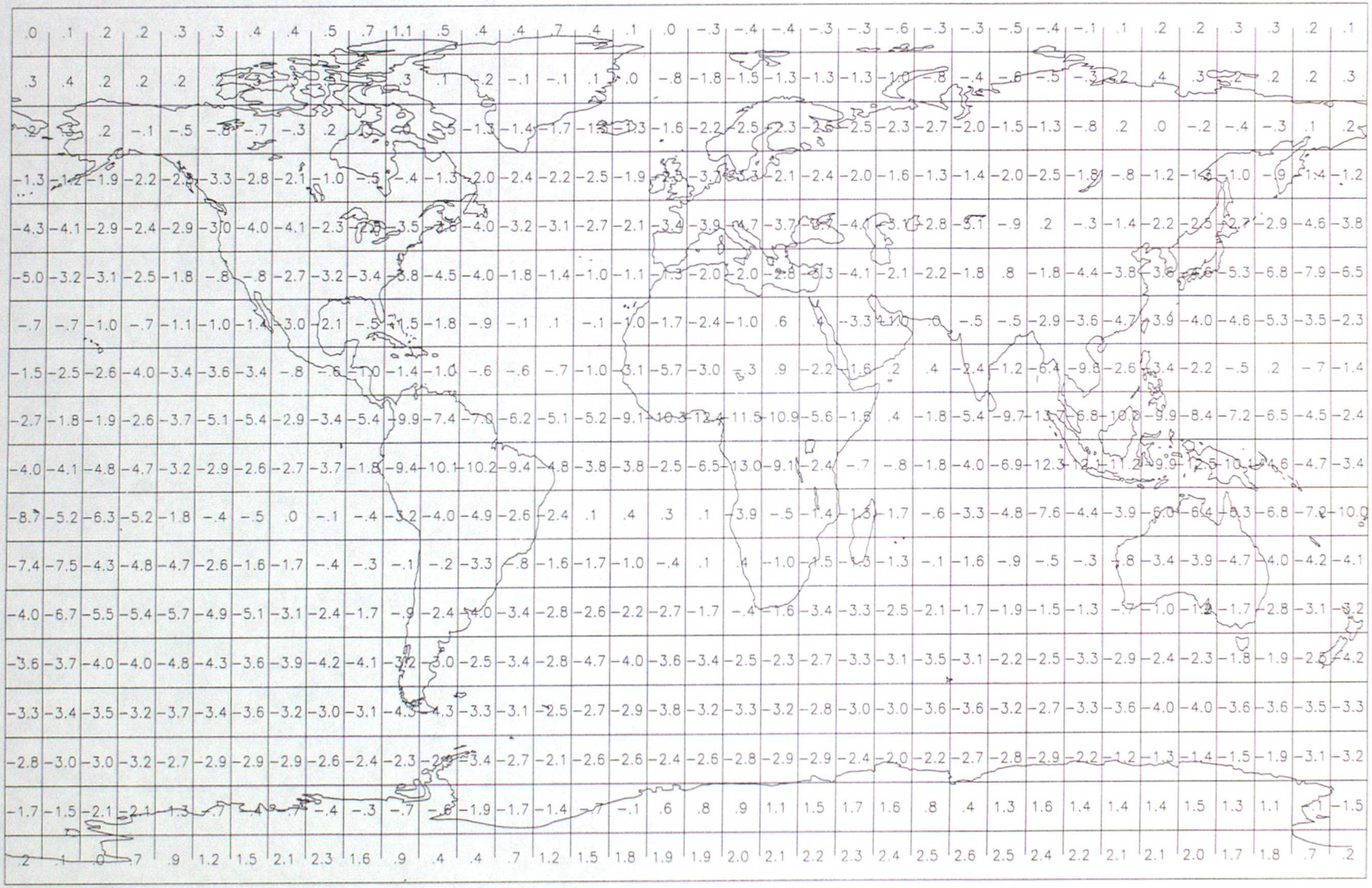
ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
APRIL 2000 : HIRS8 channel (Surface)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 27



3.8	3.7	3.6	3.3	3.2	3.1	3.1	3.3	4.9	7.0	8.7	6.3	6.1	5.9	6.5	6.5	5.6	5.0	5.7	6.6	6.6	6.2	6.0	6.1	5.2	5.6	6.1	6.3	5.0	4.1	3.8	3.7	3.6	3.4	3.5	3.7
4.7	4.6	4.6	4.0	4.0	4.2	3.9	3.4	[illegible]	[illegible]	6.4	6.3	8.4	6.6	4.9	8.0	6.4	7.8	8.1	10.0	9.4	9.4	9.5	8.8	8.4	7.3	6.4	6.5	6.8	5.1	4.3	4.4	4.0	4.7	4.3	4.4
6.3	6.4	7.6	9.9	8.8	8.6	7.7	6.1	4.8	4.4	6.5	7.5	8.9	10.3	10.8	10.3	8.9	8.5	10.4	12.7	12.3	12.8	12.2	11.1	12.4	10.2	9.3	10.8	9.5	8.2	8.2	8.9	8.5	7.9	8.8	8.3
8.4	8.5	10.5	10.0	12.5	12.6	12.3	11.8	10.1	7.8	7.3	9.8	10.1	11.1	11.0	10.3	9.6	12.2	15.0	17.0	13.9	13.4	12.6	11.9	11.2	13.1	13.5	14.4	12.4	12.5	11.8	11.6	9.4	8.6	10.7	8.5
13.8	13.3	11.8	11.1	13.1	13.5	14.7	16.8	15.1	16.7	14.8	14.4	15.0	13.9	13.0	11.7	11.4	13.9	16.1	19.1	16.5	16.4	17.7	18.3	15.4	17.4	17.9	17.5	17.1	16.4	16.0	13.4	13.2	13.0	15.2	13.8
16.3	13.3	13.5	11.9	11.9	11.0	11.8	17.2	19.9	18.7	17.3	17.8	17.8	12.4	11.2	10.5	10.9	15.3	15.5	15.4	16.2	17.7	20.1	16.5	16.2	19.6	22.7	20.2	19.5	17.2	15.6	18.3	18.4	19.8	20.0	18.5
10.0	9.5	9.5	8.3	10.0	11.6	12.3	20.2	15.7	10.3	13.9	14.6	11.5	8.1	6.4	7.3	11.9	16.9	15.7	14.3	10.0	10.6	17.3	13.0	10.0	12.9	18.0	16.1	14.9	15.0	15.3	15.9	18.3	21.2	17.6	15.0
11.5	14.7	14.0	17.6	15.0	15.7	16.7	10.9	10.3	10.7	12.2	10.1	8.3	7.7	8.4	9.7	17.8	21.4	18.0	11.1	8.6	17.5	15.1	8.3	7.6	18.0	13.7	23.1	26.4	16.6	18.0	15.8	9.6	7.3	10.7	12.0
16.4	12.8	12.7	15.5	17.9	20.5	21.7	17.4	18.0	21.1	23.1	21.3	20.5	20.6	20.0	20.7	25.8	28.2	29.8	29.2	28.1	19.8	15.5	6.3	16.2	21.9	25.2	25.2	22.6	24.1	24.7	23.8	23.4	21.3	19.5	15.4
20.6	20.5	22.1	21.4	17.8	16.9	16.0	16.2	17.5	12.1	22.7	22.3	23.2	24.9	19.7	19.1	18.6	15.6	23.4	28.7	26.5	15.4	11.2	12.1	14.5	18.8	22.4	24.8	24.5	24.4	26.2	24.6	25.3	20.1	21.3	18.3
27.3	21.7	23.1	22.0	14.0	8.7	8.7	6.0	6.3	6.5	15.1	20.4	21.0	15.5	15.0	6.6	3.3	3.1	4.7	20.6	11.1	13.2	14.3	14.8	10.0	17.8	20.2	22.7	18.1	21.4	22.9	21.3	21.9	23.3	26.4	27.6
24.2	23.2	19.1	20.5	19.5	15.9	13.6	14.1	8.1	6.3	5.7	10.7	19.8	10.8	13.5	12.7	10.8	7.8	4.8	8.1	11.8	12.5	12.9	13.1	8.2	12.1	8.7	7.4	7.0	10.9	15.3	14.9	15.7	16.5	18.2	18.4
17.7	20.0	17.6	18.0	18.4	16.8	18.1	14.3	12.5	10.6	10.6	15.2	18.8	16.7	14.8	14.8	13.7	15.0	11.9	9.2	13.9	16.7	16.0	14.0	13.6	11.6	10.8	10.2	10.3	9.3	10.4	11.2	13.7	15.5	15.0	16.6
14.4	14.8	15.7	14.5	15.6	14.9	13.7	13.7	14.0	14.0	14.4	18.7	14.3	15.1	13.5	15.9	14.3	13.3	13.1	11.5	11.5	13.0	13.6	13.2	14.2	13.3	10.9	11.4	13.4	12.6	11.5	11.5	11.5	11.9	13.9	16.9
12.6	12.6	12.3	12.0	12.2	12.6	12.0	11.3	11.7	12.8	14.4	15.1	12.7	11.6	10.7	10.7	10.3	11.3	10.9	11.2	10.7	10.5	11.4	10.9	11.9	12.4	11.7	10.8	12.1	11.8	12.5	12.3	11.9	12.5	12.1	12.3
9.5	9.7	9.4	9.6	8.9	10.2	9.4	9.1	9.2	9.7	10.3	12.8	11.7	9.4	8.4	9.3	9.4	8.7	8.6	9.1	8.8	9.5	11.1	11.9	11.0	10.1	11.7	12.7	11.6	10.5	11.2	12.1	10.4	10.4	9.7	9.8
8.4	8.3	10.4	13.4	12.7	12.5	10.8	10.0	10.6	10.8	10.8	10.1	7.4	7.8	7.8	10.9	11.0	8.7	6.8	6.8	7.7	6.6	6.0	5.3	6.5	8.0	6.3	6.8	5.2	4.2	3.6	3.9	4.1	5.0	9.8	8.0
9.4	10.1	10.7	10.3	8.3	7.0	6.0	6.8	6.8	3.9	6.0	7.8	9.2	8.9	7.8	5.7	4.8	4.7	4.6	5.0	4.3	3.7	4.4	5.1	5.8	6.1	5.5	5.3	5.0	4.9	5.2	5.1	5.3	7.1	11.4	9.3

ATOVS : MEAN O–B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)   FIGURE 28
APRIL 2000   : HIRS15 Channel (700 hPa)
NOAA–15, USING ALL OBSERVATIONS

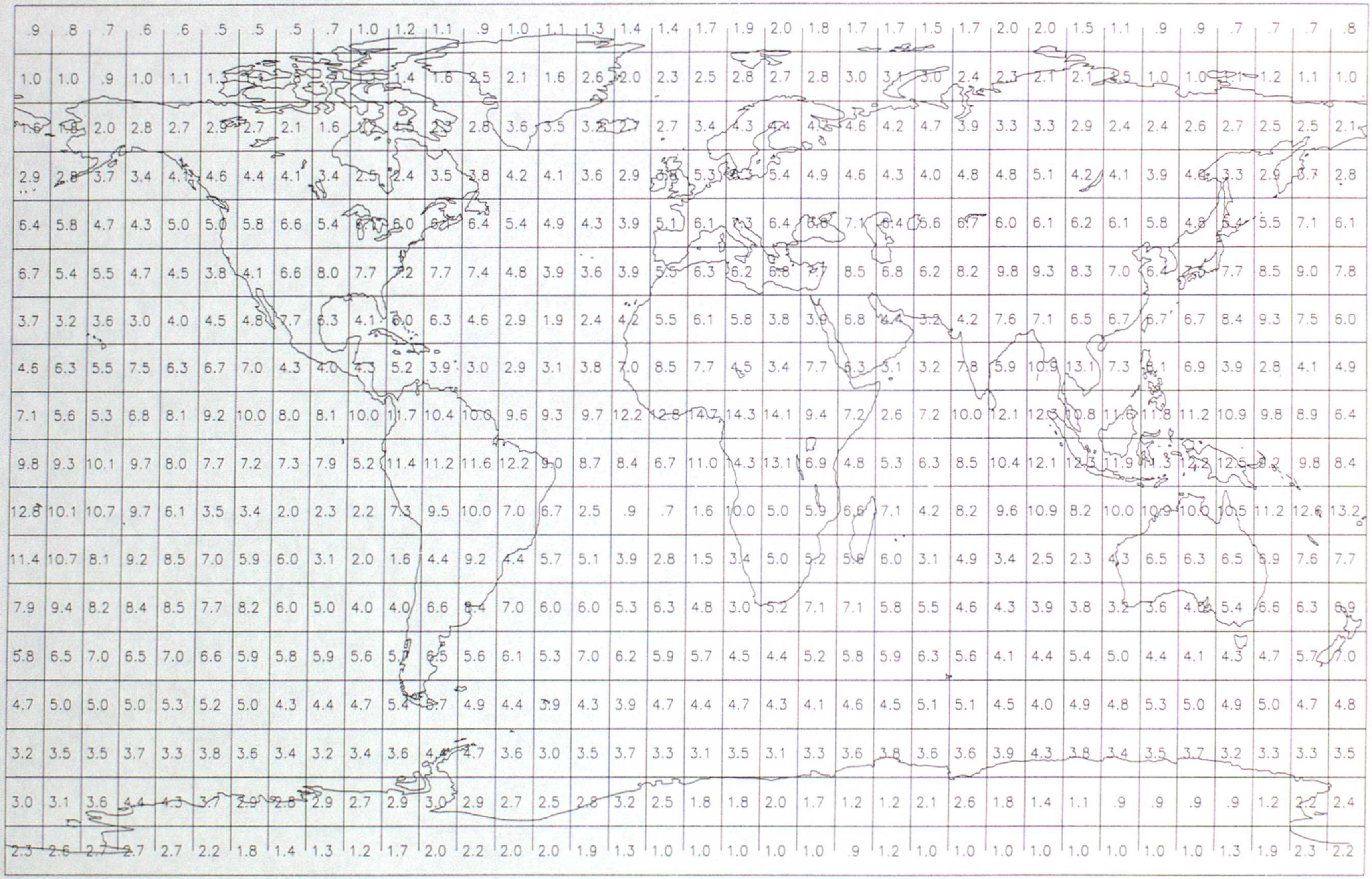

.0 .1 .2 .2 .3 .3 .4 .4 .5 .7 1.1 .5 .4 .4 .7 .4 .1 .0 -.3 -.4 -.4 -.3 -.3 -.6 -.3 -.3 -.5 -.4 -.1 .1 .2 .2 .3 .3 .2 .1
.3 .4 .2 .2 .2 .2 .3 .3 .1 .2 -.1 -.1 .1 .0 -.8 -1.8 -1.5 -1.3 -1.3 -1.3 -1.0 -.8 -.4 -.6 -.5 -.3 .2 .4 .3 .2 .2 .2 .3
.2 .3 .2 -.1 -.5 -.8 -.7 -.3 .2 [illegible] [illegible] -.5 -1.3 -1.4 -1.7 -1.3 -1.3 -1.6 -2.2 -2.5 -2.3 -2.5 -2.5 -2.3 -2.7 -2.0 -1.5 -1.3 -.8 .2 .0 -.2 -.4 -.3 .1 .2
-1.3 -1.2 -1.9 -2.2 -2.3 -3.3 -2.8 -2.1 -1.0 -.5 -.4 -1.3 -2.0 -2.4 -2.2 -2.5 -1.9 -2.5 -3.7 -3.3 -2.1 -2.4 -2.0 -1.6 -1.3 -1.4 -2.0 -2.5 -1.8 -.8 -1.2 -1.3 -1.0 -.9 -1.4 -1.2
-4.3 -4.1 -2.9 -2.4 -2.9 -3.0 -4.0 -4.1 -2.3 -2.5 -3.5 -2.6 -4.0 -3.2 -3.1 -2.7 -2.1 -3.4 -3.9 -4.7 -3.7 -3.7 -4.1 -3.1 -2.8 -3.1 -.9 .2 -.3 -1.4 -2.2 -2.5 -2.7 -2.9 -4.6 -3.8
-5.0 -3.2 -3.1 -2.5 -1.8 -.8 -.8 -2.7 -3.2 -3.4 -3.8 -4.5 -4.0 -1.8 -1.4 -1.0 -1.1 -1.3 -2.0 -2.0 -2.8 -3.3 -4.1 -2.1 -2.2 -1.8 .8 -1.8 -4.4 -3.8 -3.6 -4.6 -5.3 -6.8 -7.9 -6.5
-.7 -.7 -1.0 -.7 -1.1 -1.0 -1.4 -3.0 -2.1 -.5 -1.5 -1.8 -.9 -.1 .1 -.1 -1.0 -1.7 -2.4 -1.0 .6 .4 -3.3 -1.0 .0 -.5 -.5 -2.9 -3.6 -4.7 -3.9 -4.0 -4.6 -5.3 -3.5 -2.3
-1.5 -2.5 -2.6 -4.0 -3.4 -3.6 -3.4 -.8 -.6 -1.0 -1.4 -1.0 -.6 -.6 -.7 -1.0 -3.1 -5.7 -3.0 .3 .9 -2.2 -1.6 .2 .4 -2.4 -1.2 -6.4 -9.8 -2.6 -3.4 -2.2 -.5 .2 -.7 -1.4
-2.7 -1.8 -1.9 -2.6 -3.7 -5.1 -5.4 -2.9 -3.4 -5.4 -9.9 -7.4 -7.0 -6.2 -5.1 -5.2 -9.1 -10.3 -12.4 -11.5 -10.9 -5.6 -1.6 .4 -1.8 -5.4 -9.7 -13.7 -6.8 -10.0 -9.9 -8.4 -7.2 -6.5 -4.5 -2.4
-4.0 -4.1 -4.8 -4.7 -3.2 -2.9 -2.6 -2.7 -3.7 -1.8 -9.4 -10.1 -10.2 -9.4 -4.8 -3.8 -3.8 -2.5 -6.5 -13.0 -9.1 -2.4 -.7 -.8 -1.8 -4.0 -6.9 -12.3 -12.1 -11.2 -9.9 -12.5 -10.1 -4.6 -4.7 -3.4
-8.7 -5.2 -6.3 -5.2 -1.8 -.4 -.5 .0 -.1 -.4 -3.2 -4.0 -4.9 -2.6 -2.4 .1 .4 .3 .1 -3.9 -.5 -1.4 -1.3 -1.7 -.6 -3.3 -4.8 -7.6 -4.4 -3.9 -6.0 -6.4 -6.3 -6.8 -7.2 -10.0
-7.4 -7.5 -4.3 -4.8 -4.7 -2.6 -1.6 -1.7 -.4 -.3 -.1 -.2 -3.3 -.8 -1.6 -1.7 -1.0 -.4 .1 .4 -1.0 -1.5 -1.3 -1.3 -.1 -1.6 -.9 -.5 -.3 -.8 -3.4 -3.9 -4.7 -4.0 -4.2 -4.1
-4.0 -6.7 -5.5 -5.4 -5.7 -4.9 -5.1 -3.1 -2.4 -1.7 -.9 -2.4 -4.0 -3.4 -2.8 -2.6 -2.2 -2.7 -1.7 -.4 -1.6 -3.4 -3.3 -2.5 -2.1 -1.7 -1.9 -1.5 -1.3 -.7 -1.0 -1.2 -1.7 -2.8 -3.1 -3.2
-3.6 -3.7 -4.0 -4.0 -4.8 -4.3 -3.6 -3.9 -4.2 -4.1 -3.2 -3.0 -2.5 -3.4 -2.8 -4.7 -4.0 -3.6 -3.4 -2.5 -2.3 -2.7 -3.3 -3.1 -3.5 -3.1 -2.2 -2.5 -3.3 -2.9 -2.4 -2.3 -1.8 -1.9 -2.5 -4.2
-3.3 -3.4 -3.5 -3.2 -3.7 -3.4 -3.6 -3.2 -3.0 -3.1 -4.3 -4.3 -3.3 -3.1 -2.5 -2.7 -2.9 -3.8 -3.2 -3.3 -3.2 -2.8 -3.0 -3.0 -3.6 -3.6 -3.2 -2.7 -3.3 -3.6 -4.0 -4.0 -3.6 -3.6 -3.5 -3.3
-2.8 -3.0 -3.0 -3.2 -2.7 -2.9 -2.9 -2.9 -2.6 -2.4 -2.3 -2.9 -3.4 -2.7 -2.1 -2.6 -2.6 -2.4 -2.6 -2.8 -2.9 -2.9 -2.4 -2.0 -2.2 -2.7 -2.8 -2.9 -2.2 -1.2 -1.3 -1.4 -1.5 -1.9 -3.1 -3.2
-1.7 -1.5 -2.1 -2.1 -1.3 -.7 -.4 -.7 -.4 -.3 -.7 -.6 -1.9 -1.7 -1.4 -.7 -.1 .6 .8 .9 1.1 1.5 1.7 1.6 .8 .4 1.3 1.6 1.4 1.4 1.4 1.5 1.3 1.1 -.1 -1.5
.2 .1 .0 .7 .9 1.2 1.5 2.1 2.3 1.6 .9 .4 .4 .7 1.2 1.5 1.8 1.9 1.9 2.0 2.1 2.2 2.3 2.4 2.5 2.6 2.5 2.4 2.2 2.1 2.1 2.0 1.7 1.8 .7 .2

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)

FIGURE 29

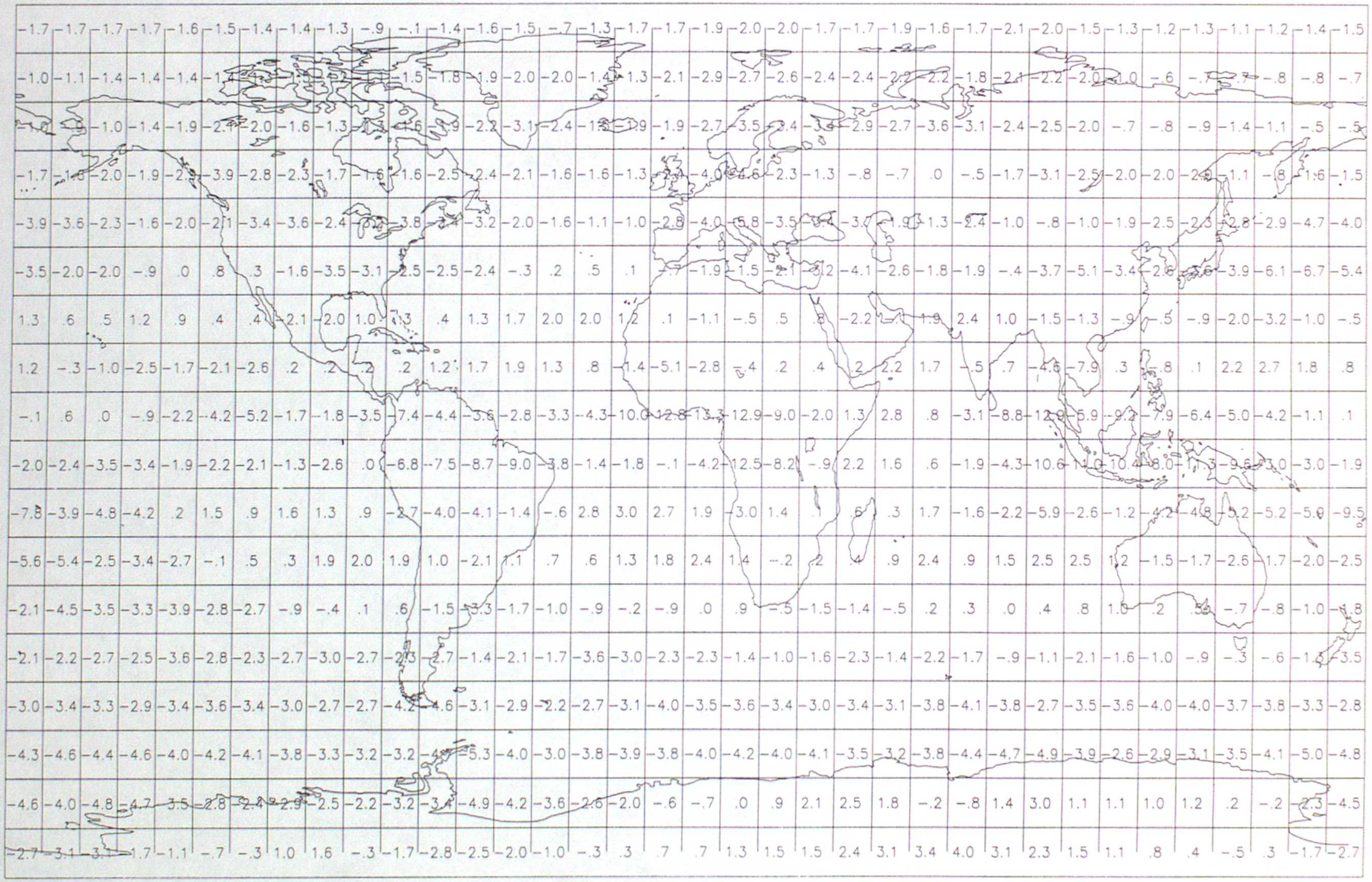
APRIL 2000 : HIRS15 channel (700 hPa)

NOAA-15, USING ALL OBSERVATIONS



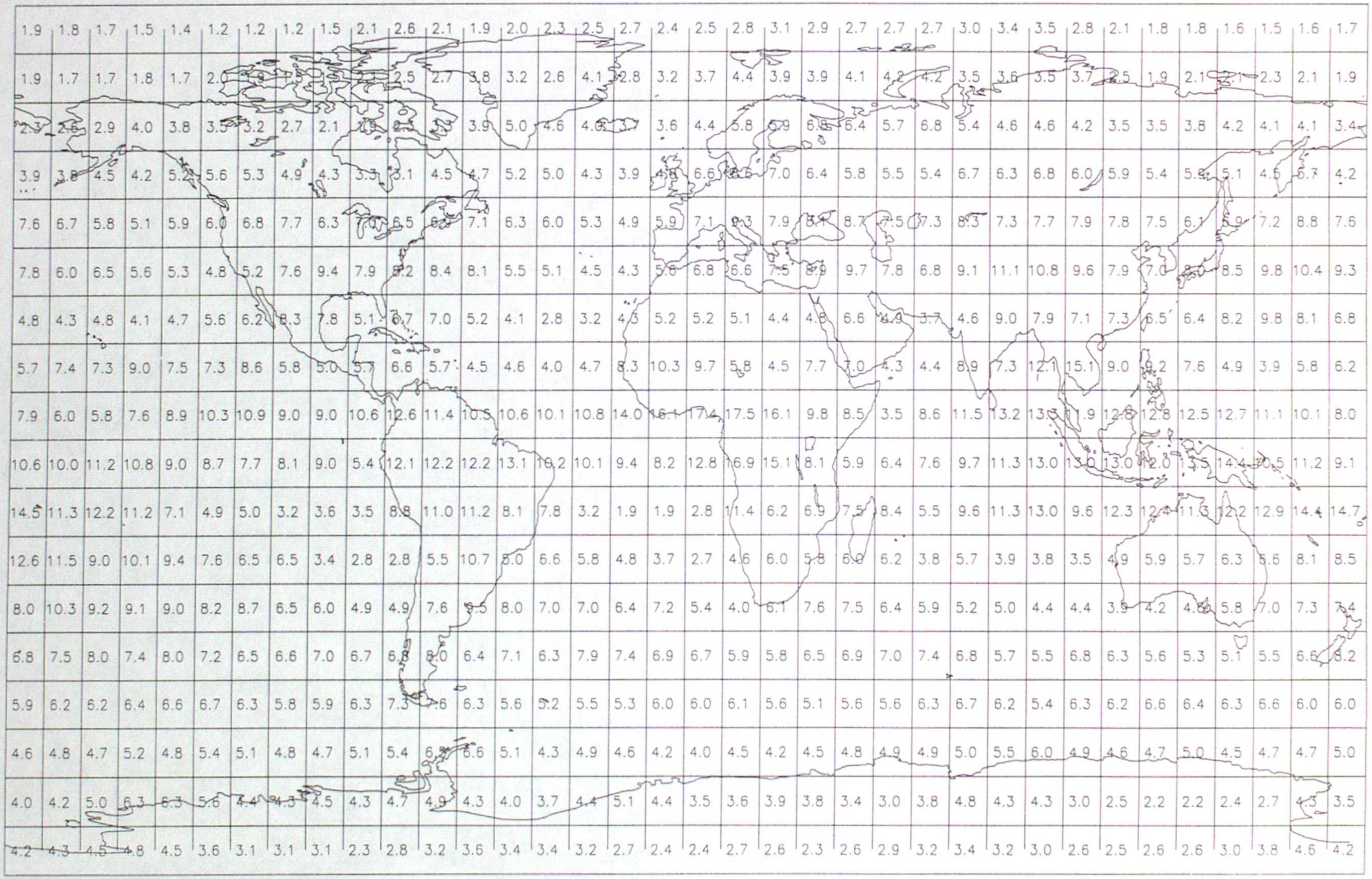
.9	.8	.7	.6	.6	.5	.5	.5	.7	1.0	1.2	1.1	.9	1.0	1.1	1.3	1.4	1.4	1.7	1.9	2.0	1.8	1.7	1.7	1.5	1.7	2.0	2.0	1.5	1.1	.9	.9	.7	.7	.7	.8
1.0	1.0	.9	1.0	1.1	1.3	[illegible]	[illegible]	[illegible]	[illegible]	1.4	1.6	2.5	2.1	1.6	2.6	2.0	2.3	2.5	2.8	2.7	2.8	3.0	3.1	3.0	2.4	2.3	2.1	2.1	2.5	1.0	1.0	[illegible]	1.2	1.1	1.0
1.6	1.8	2.0	2.8	2.7	2.9	2.7	2.1	1.6	[illegible]	4.5	2.3	2.8	3.6	3.5	3.2	2.7	2.7	3.4	4.3	4.4	4.5	4.6	4.2	4.7	3.9	3.3	3.3	2.9	2.4	2.4	2.6	2.7	2.5	2.5	2.1
2.9	2.8	3.7	3.4	4.1	4.6	4.4	4.1	3.4	2.5	2.4	3.5	3.8	4.2	4.1	3.6	2.9	3.8	5.3	[illegible]	5.4	4.9	4.6	4.3	4.0	4.8	4.8	5.1	4.2	4.1	3.9	4.6	3.3	2.9	3.7	2.8
6.4	5.8	4.7	4.3	5.0	5.0	5.8	6.6	5.4	6.1	6.0	6.7	6.4	5.4	4.9	4.3	3.9	5.1	6.1	7.3	6.4	6.8	7.1	6.4	5.6	6.7	6.0	6.1	6.2	6.1	5.8	4.8	5.4	5.5	7.1	6.1
6.7	5.4	5.5	4.7	4.5	3.8	4.1	6.6	8.0	7.7	7.2	7.7	7.4	4.8	3.9	3.6	3.9	5.5	6.3	6.2	6.8	7.7	8.5	6.8	6.2	8.2	9.8	9.3	8.3	7.0	6.4	7.5	7.7	8.5	9.0	7.8
3.7	3.2	3.6	3.0	4.0	4.5	4.8	7.7	6.3	4.1	6.0	6.3	4.6	2.9	1.9	2.4	4.2	5.5	6.1	5.8	3.8	3.9	6.8	4.4	3.2	4.2	7.6	7.1	6.5	6.7	6.7	6.7	8.4	9.3	7.5	6.0
4.6	6.3	5.5	7.5	6.3	6.7	7.0	4.3	4.0	4.3	5.2	3.9	3.0	2.9	3.1	3.8	7.0	8.5	7.7	4.5	3.4	7.7	6.3	3.1	3.2	7.8	5.9	10.9	13.1	7.3	6.1	6.9	3.9	2.8	4.1	4.9
7.1	5.6	5.3	6.8	8.1	9.2	10.0	8.0	8.1	10.0	11.7	10.4	10.0	9.6	9.3	9.7	12.2	12.8	14.7	14.3	14.1	9.4	7.2	2.6	7.2	10.0	12.1	12.3	10.8	11.6	11.8	11.2	10.9	9.8	8.9	6.4
9.8	9.3	10.1	9.7	8.0	7.7	7.2	7.3	7.9	5.2	11.4	11.2	11.6	12.2	9.0	8.7	8.4	6.7	11.0	14.3	13.1	6.9	4.8	5.3	6.3	8.5	10.4	12.1	12.3	11.9	11.3	12.2	12.5	9.2	9.8	8.4
12.8	10.1	10.7	9.7	6.1	3.5	3.4	2.0	2.3	2.2	7.3	9.5	10.0	7.0	6.7	2.5	.9	.7	1.6	10.0	5.0	5.9	6.6	7.1	4.2	8.2	9.6	10.9	8.2	10.0	10.9	10.0	10.5	11.2	12.6	13.2
11.4	10.7	8.1	9.2	8.5	7.0	5.9	6.0	3.1	2.0	1.6	4.4	9.2	4.4	5.7	5.1	3.9	2.8	1.5	3.4	5.0	5.2	5.6	6.0	3.1	4.9	3.4	2.5	2.3	4.3	6.5	6.3	6.5	6.9	7.6	7.7
7.9	9.4	8.2	8.4	8.5	7.7	8.2	6.0	5.0	4.0	4.0	6.6	8.4	7.0	6.0	6.0	5.3	6.3	4.8	3.0	5.2	7.1	7.1	5.8	5.5	4.6	4.3	3.9	3.8	3.2	3.6	4.6	5.4	6.6	6.3	6.9
5.8	6.5	7.0	6.5	7.0	6.6	5.9	5.8	5.9	5.6	5.7	6.5	5.6	6.1	5.3	7.0	6.2	5.9	5.7	4.5	4.4	5.2	5.8	5.9	6.3	5.6	4.1	4.4	5.4	5.0	4.4	4.1	4.3	4.7	5.7	7.0
4.7	5.0	5.0	5.0	5.3	5.2	5.0	4.3	4.4	4.7	5.4	5.7	4.9	4.4	3.9	4.3	3.9	4.7	4.4	4.7	4.3	4.1	4.6	4.5	5.1	5.1	4.5	4.0	4.9	4.8	5.3	5.0	4.9	5.0	4.7	4.8
3.2	3.5	3.5	3.7	3.3	3.8	3.6	3.4	3.2	3.4	3.6	4.4	4.7	3.6	3.0	3.5	3.7	3.3	3.1	3.5	3.1	3.3	3.6	3.8	3.6	3.6	3.9	4.3	3.8	3.4	3.5	3.7	3.2	3.3	3.3	3.5
3.0	3.1	3.6	4.4	4.3	3.7	2.9	2.8	2.9	2.7	2.9	3.0	2.9	2.7	2.5	2.8	3.2	2.5	1.8	1.8	2.0	1.7	1.2	1.2	2.1	2.6	1.8	1.4	1.1	.9	.9	.9	.9	1.2	2.2	2.4
2.3	2.6	2.7	2.7	2.7	2.2	1.8	1.4	1.3	1.2	1.7	2.0	2.2	2.0	2.0	1.9	1.3	1.0	1.0	1.0	1.0	1.0	.9	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.3	1.9	2.3	2.2

ATOVS : MEAN O−B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)　　FIGURE 30
APRIL 2000　　: HIRS11 Channel (500−700 hPa)
NOAA−15, USING ALL OBSERVATIONS



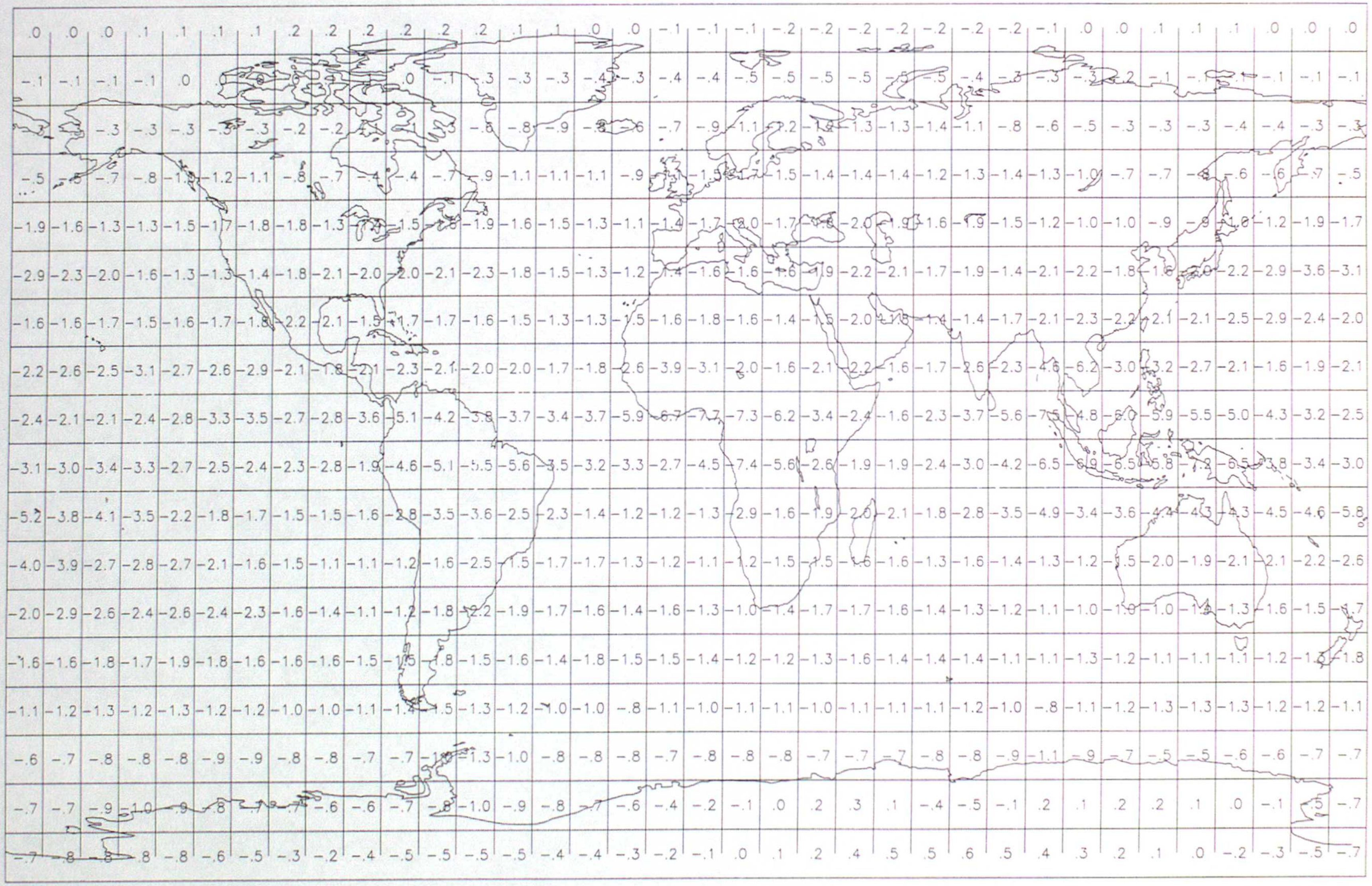
ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
APRIL 2000 : HIRS11 channel (500-700 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 31



1.9	1.8	1.7	1.5	1.4	1.2	1.2	1.2	1.5	2.1	2.6	2.1	1.9	2.0	2.3	2.5	2.7	2.4	2.5	2.8	3.1	2.9	2.7	2.7	2.7	3.0	3.4	3.5	2.8	2.1	1.8	1.8	1.6	1.5	1.6	1.7
1.9	1.7	1.7	1.8	1.7	2.0	1.9	1.5	1.5	2.1	2.5	2.7	3.8	3.2	2.6	4.1	2.8	3.2	3.7	4.4	3.9	3.9	4.1	4.2	4.2	3.5	3.6	3.5	3.7	2.5	1.9	2.1	2.1	2.3	2.1	1.9
2.3	2.6	2.9	4.0	3.8	3.5	3.2	2.7	2.1	1.9	2.3	3.3	3.9	5.0	4.6	4.6	3.7	3.6	4.4	5.8	5.9	6.8	6.4	5.7	6.8	5.4	4.6	4.6	4.2	3.5	3.5	3.8	4.2	4.1	4.1	3.4
3.9	3.8	4.5	4.2	5.2	5.6	5.3	4.9	4.3	3.3	3.1	4.5	4.7	5.2	5.0	4.3	3.9	4.8	6.6	8.6	7.0	6.4	5.8	5.5	5.4	6.7	6.3	6.8	6.0	5.9	5.4	5.9	5.1	4.5	5.7	4.2
7.6	6.7	5.8	5.1	5.9	6.0	6.8	7.7	6.3	7.0	6.5	6.9	7.1	6.3	6.0	5.3	4.9	5.9	7.1	9.3	7.9	8.4	8.7	7.5	7.3	8.3	7.3	7.7	7.9	7.8	7.5	6.1	5.9	7.2	8.8	7.6
7.8	6.0	6.5	5.6	5.3	4.8	5.2	7.6	9.4	7.9	8.2	8.4	8.1	5.5	5.1	4.5	4.3	5.6	6.8	6.6	7.5	8.9	9.7	7.8	6.8	9.1	11.1	10.8	9.6	7.9	7.0	8.0	8.5	9.8	10.4	9.3
4.8	4.3	4.8	4.1	4.7	5.6	6.2	8.3	7.8	5.1	6.7	7.0	5.2	4.1	2.8	3.2	4.3	5.2	5.2	5.1	4.4	4.8	6.6	4.9	3.7	4.6	9.0	7.9	7.1	7.3	6.5	6.4	8.2	9.8	8.1	6.8
5.7	7.4	7.3	9.0	7.5	7.3	8.6	5.8	5.0	5.7	6.6	5.7	4.5	4.6	4.0	4.7	8.3	10.3	9.7	5.8	4.5	7.7	7.0	4.3	4.4	8.9	7.3	12.1	15.1	9.0	9.2	7.6	4.9	3.9	5.8	6.2
7.9	6.0	5.8	7.6	8.9	10.3	10.9	9.0	9.0	10.6	12.6	11.4	10.5	10.6	10.1	10.8	14.0	16.1	17.4	17.5	16.1	9.8	8.5	3.5	8.6	11.5	13.2	13.3	11.9	12.8	12.8	12.5	12.7	11.1	10.1	8.0
10.6	10.0	11.2	10.8	9.0	8.7	7.7	8.1	9.0	5.4	12.1	12.2	12.2	13.1	10.2	10.1	9.4	8.2	12.8	16.9	15.1	8.1	5.9	6.4	7.6	9.7	11.3	13.0	13.0	13.0	12.0	13.5	14.4	10.5	11.2	9.1
14.5	11.3	12.2	11.2	7.1	4.9	5.0	3.2	3.6	3.5	8.8	11.0	11.2	8.1	7.8	3.2	1.9	1.9	2.8	11.4	6.2	6.9	7.5	8.4	5.5	9.6	11.3	13.0	9.6	12.3	12.4	11.3	12.2	12.9	14.4	14.7
12.6	11.5	9.0	10.1	9.4	7.6	6.5	6.5	3.4	2.8	2.8	5.5	10.7	8.0	6.6	5.8	4.8	3.7	2.7	4.6	6.0	5.8	6.0	6.2	3.8	5.7	3.9	3.8	3.5	4.9	5.9	5.7	6.3	6.6	8.1	8.5
8.0	10.3	9.2	9.1	9.0	8.2	8.7	6.5	6.0	4.9	4.9	7.6	9.5	8.0	7.0	7.0	6.4	7.2	5.4	4.0	6.1	7.6	7.5	6.4	5.9	5.2	5.0	4.4	4.4	3.9	4.2	4.6	5.8	7.0	7.3	7.4
6.8	7.5	8.0	7.4	8.0	7.2	6.5	6.6	7.0	6.7	6.8	8.0	6.4	7.1	6.3	7.9	7.4	6.9	6.7	5.9	5.8	6.5	6.9	7.0	7.4	6.8	5.7	5.5	6.8	6.3	5.6	5.3	5.1	5.5	6.6	8.2
5.9	6.2	6.2	6.4	6.6	6.7	6.3	5.8	5.9	6.3	7.3	7.6	6.3	5.6	5.2	5.5	5.3	6.0	6.0	6.1	5.6	5.1	5.6	5.6	6.3	6.7	6.2	5.4	6.3	6.2	6.6	6.4	6.3	6.6	6.0	6.0
4.6	4.8	4.7	5.2	4.8	5.4	5.1	4.8	4.7	5.1	5.4	6.5	6.6	5.1	4.3	4.9	4.6	4.2	4.0	4.5	4.2	4.5	4.8	4.9	4.9	5.0	5.5	6.0	4.9	4.6	4.7	5.0	4.5	4.7	4.7	5.0
4.0	4.2	5.0	6.3	6.3	5.6	4.4	4.3	4.5	4.3	4.7	4.9	4.3	4.0	3.7	4.4	5.1	4.4	3.5	3.6	3.9	3.8	3.4	3.0	3.8	4.8	4.3	4.3	3.0	2.5	2.2	2.2	2.4	2.7	4.3	3.5
4.2	4.3	4.5	4.8	4.5	3.6	3.1	3.1	3.1	2.3	2.8	3.2	3.6	3.4	3.4	3.2	2.7	2.4	2.4	2.7	2.6	2.3	2.6	2.9	3.2	3.4	3.2	3.0	2.6	2.5	2.6	2.6	3.0	3.8	4.6	4.2

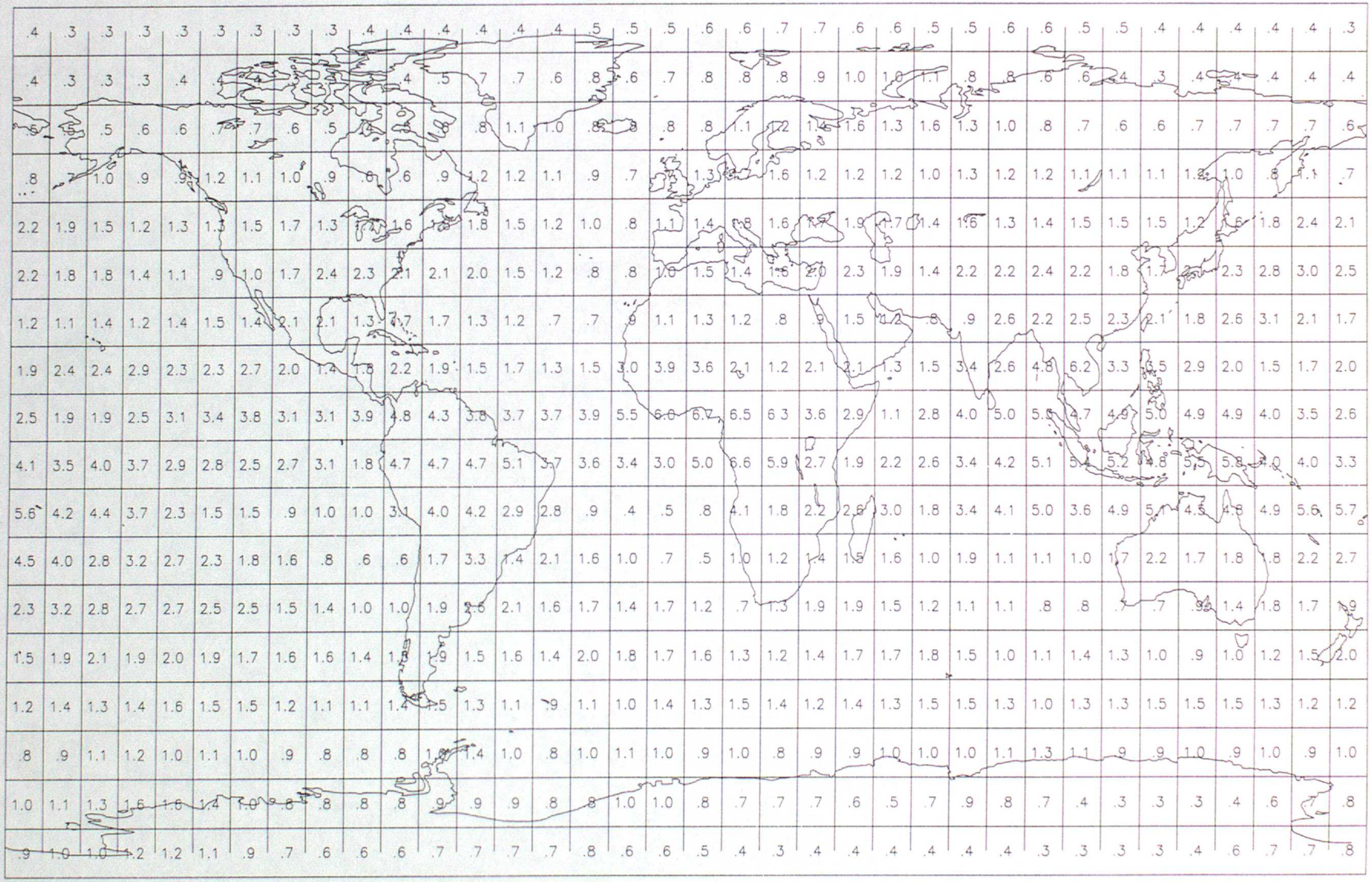
ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C) FIGURE 32
APRIL 2000 : HIRS4 channel (400 hPa)
NOAA-15, USING ALL OBSERVATIONS



.0	.0	.0	.1	.1	.1	.1	.2	.2	.2	.2	.2	.2	.1	.1	.0	.0	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	.0	.0	.1	.1	.1	.0	.0	.0
-.1	-.1	-.1	-.1	.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0	-.1	-.3	-.3	-.3	-.4	-.3	-.4	-.4	-.5	-.5	-.5	-.5	-.5	-.5	-.4	-.3	-.3	-.3	-.2	-.1	-.1	.1	-.1	-.1	-.1
-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.2	-.2	-.1	-.1	-.3	-.6	-.8	-.9	-.8	-.6	-.7	-.9	-1.1	-1.2	-1.2	-1.3	-1.3	-1.4	-1.1	-.8	-.6	-.5	-.3	-.3	-.3	-.4	-.4	-.3	-.3
-.5	-.5	-.7	-.8	-1.2	-1.2	-1.1	-.8	-.7	-.4	-.4	-.7	-.9	-1.1	-1.1	-1.1	-.9	-1.1	-1.5	-1.7	-1.5	-1.4	-1.4	-1.4	-1.2	-1.3	-1.4	-1.3	-1.0	-.7	-.7	-.8	-.6	-.6	-.7	-.5
-1.9	-1.6	-1.3	-1.3	-1.5	-1.7	-1.8	-1.8	-1.3	-1.4	-1.5	-1.6	-1.9	-1.6	-1.5	-1.3	-1.1	-1.4	-1.7	-2.0	-1.7	-1.8	-2.0	-1.9	-1.6	-1.9	-1.5	-1.2	-1.0	-1.0	-.9	-.9	-1.0	-1.2	-1.9	-1.7
-2.9	-2.3	-2.0	-1.6	-1.3	-1.3	-1.4	-1.8	-2.1	-2.0	-2.0	-2.1	-2.3	-1.8	-1.5	-1.3	-1.2	-1.4	-1.6	-1.6	-1.6	-1.9	-2.2	-2.1	-1.7	-1.9	-1.4	-2.1	-2.2	-1.8	-1.6	-2.0	-2.2	-2.9	-3.6	-3.1
-1.6	-1.6	-1.7	-1.5	-1.6	-1.7	-1.8	-2.2	-2.1	-1.5	-1.7	-1.7	-1.6	-1.5	-1.3	-1.3	-1.5	-1.6	-1.8	-1.6	-1.4	-1.5	-2.0	-1.8	-1.4	-1.4	-1.7	-2.1	-2.3	-2.2	-2.1	-2.1	-2.5	-2.9	-2.4	-2.0
-2.2	-2.6	-2.5	-3.1	-2.7	-2.6	-2.9	-2.1	-1.8	-2.1	-2.3	-2.1	-2.0	-2.0	-1.7	-1.8	-2.6	-3.9	-3.1	-2.0	-1.6	-2.1	-2.2	-1.6	-1.7	-2.6	-2.3	-4.6	-6.2	-3.0	-3.2	-2.7	-2.1	-1.6	-1.9	-2.1
-2.4	-2.1	-2.1	-2.4	-2.8	-3.3	-3.5	-2.7	-2.8	-3.6	-5.1	-4.2	-3.8	-3.7	-3.4	-3.7	-5.9	-6.7	-7.7	-7.3	-6.2	-3.4	-2.4	-1.6	-2.3	-3.7	-5.6	-7.5	-4.8	-6.0	-5.9	-5.5	-5.0	-4.3	-3.2	-2.5
-3.1	-3.0	-3.4	-3.3	-2.7	-2.5	-2.4	-2.3	-2.8	-1.9	-4.6	-5.1	-5.5	-5.6	-3.5	-3.2	-3.3	-2.7	-4.5	-7.4	-5.6	-2.6	-1.9	-1.9	-2.4	-3.0	-4.2	-6.5	-6.9	-6.5	-5.8	-7.2	-6.5	-3.8	-3.4	-3.0
-5.2	-3.8	-4.1	-3.5	-2.2	-1.8	-1.7	-1.5	-1.5	-1.6	-2.8	-3.5	-3.6	-2.5	-2.3	-1.4	-1.2	-1.2	-1.3	-2.9	-1.6	-1.9	-2.0	-2.1	-1.8	-2.8	-3.5	-4.9	-3.4	-3.6	-4.4	-4.3	-4.3	-4.5	-4.6	-5.8
-4.0	-3.9	-2.7	-2.8	-2.7	-2.1	-1.6	-1.5	-1.1	-1.1	-1.2	-1.6	-2.5	-1.5	-1.7	-1.7	-1.3	-1.2	-1.1	-1.2	-1.5	-1.5	-1.6	-1.6	-1.3	-1.6	-1.4	-1.3	-1.2	-1.5	-2.0	-1.9	-2.1	-2.1	-2.2	-2.6
-2.0	-2.9	-2.6	-2.4	-2.6	-2.4	-2.3	-1.6	-1.4	-1.1	-1.2	-1.8	-2.2	-1.9	-1.7	-1.6	-1.4	-1.6	-1.3	-1.0	-1.4	-1.7	-1.7	-1.6	-1.4	-1.3	-1.2	-1.1	-1.0	-1.0	-1.0	-1.3	-1.3	-1.6	-1.5	-1.7
-1.6	-1.6	-1.8	-1.7	-1.9	-1.8	-1.6	-1.6	-1.6	-1.5	-1.5	-1.8	-1.5	-1.6	-1.4	-1.8	-1.5	-1.5	-1.4	-1.2	-1.2	-1.3	-1.6	-1.4	-1.4	-1.4	-1.1	-1.1	-1.3	-1.2	-1.1	-1.1	-1.1	-1.2	-1.5	-1.8
-1.1	-1.2	-1.3	-1.2	-1.3	-1.2	-1.2	-1.0	-1.0	-1.1	-1.4	-1.5	-1.3	-1.2	-1.0	-1.0	-.8	-1.1	-1.0	-1.1	-1.1	-1.0	-1.1	-1.1	-1.1	-1.2	-1.0	-.8	-1.1	-1.2	-1.3	-1.3	-1.3	-1.2	-1.2	-1.1
-.6	-.7	-.8	-.8	-.8	-.9	-.9	-.8	-.8	-.7	-.7	-1.0	-1.3	-1.0	-.8	-.8	-.8	-.7	-.8	-.8	-.8	-.7	-.7	-.7	-.8	-.8	-.9	-1.1	-.9	-.7	-.5	-.5	-.6	-.6	-.7	-.7
-.7	-.7	-.9	-1.0	-.9	-.8	-.7	-.7	-.6	-.6	-.7	-.8	-1.0	-.9	-.8	-.7	-.6	-.4	-.2	-.1	.0	.2	.3	.1	-.4	-.5	-.1	.2	.1	.2	.2	.1	.0	-.1	-.5	-.7
-.7	-.8	-.8	.8	-.8	-.6	-.5	-.3	-.2	-.4	-.5	-.5	-.5	-.5	-.4	-.4	-.3	-.2	-.1	.0	.1	.2	.4	.5	.5	.6	.5	.4	.3	.2	.1	.0	-.2	-.3	-.5	-.7

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
APRIL 2000 : HIRS4 channel (400 hPa)
NOAA-15, USING ALL OBSERVATIONS

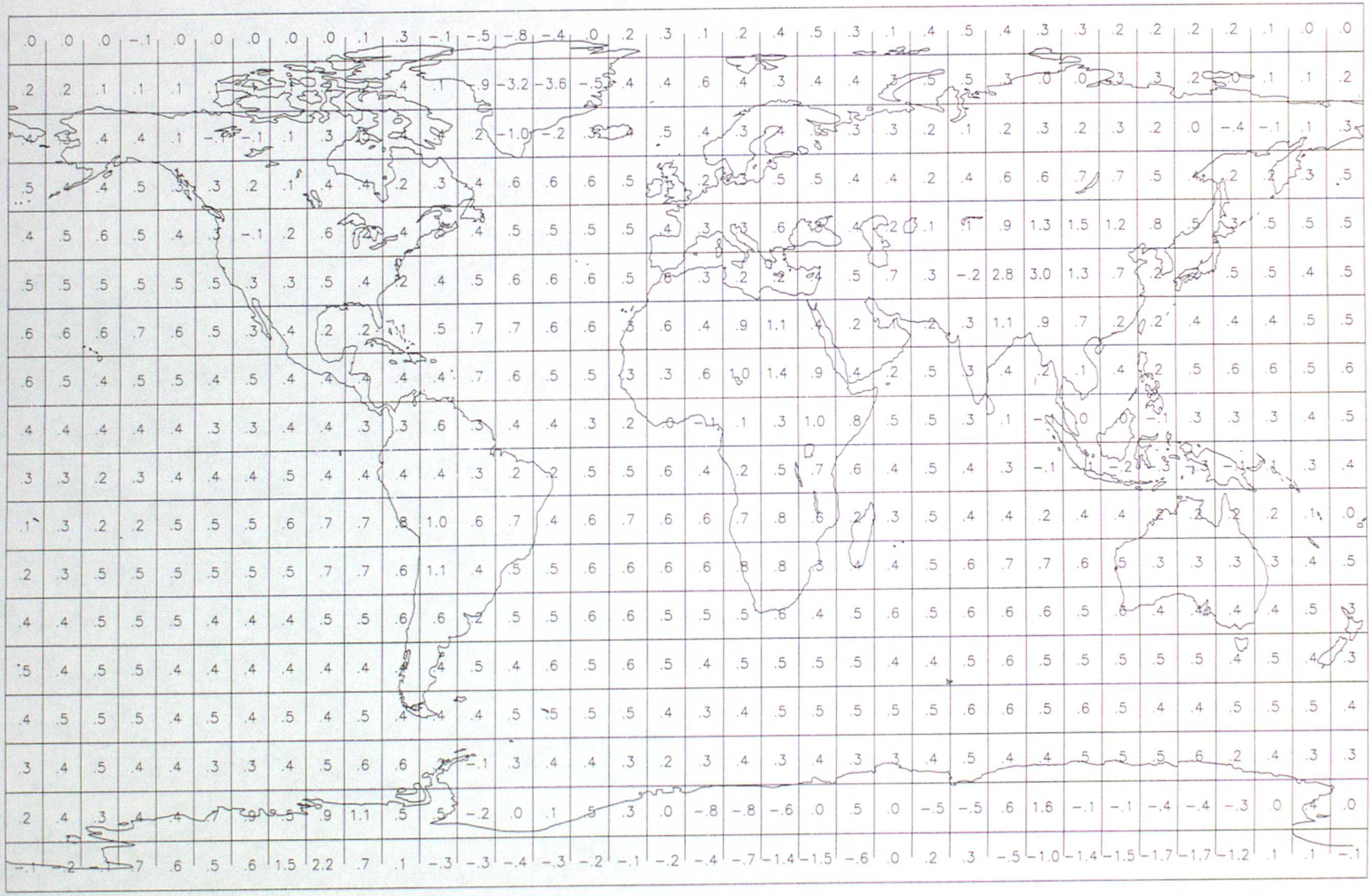
FIGURE 33



.4	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.5	.5	.5	.6	.6	.7	.7	.6	.6	.5	.5	.6	.6	.5	.5	.4	.4	.4	.4	.4	.3
.4	.3	.3	.3	.4	.4	.4	[illegible]	[illegible]	[illegible]	.4	.5	.7	.7	.6	.8	.6	.7	.8	.8	.8	.9	1.0	1.0	1.1	.8	.8	.6	.6	.4	.3	.4	.4	.4	.4	.4
.5	.5	.5	.6	.6	.7	.7	.6	.5	.4	.5	.8	.8	1.1	1.0	.8	.8	.8	.8	1.1	1.2	1.4	1.6	1.3	1.6	1.3	1.0	.8	.7	.6	.6	.7	.7	.7	.7	.6
.8	.7	1.0	.9	.9	1.2	1.1	1.0	.9	.6	.6	.9	1.2	1.2	1.1	.9	.7	.7	1.3	1.7	1.6	1.2	1.2	1.2	1.0	1.3	1.2	1.2	1.1	1.1	1.1	1.2	1.0	.8	1.1	.7
2.2	1.9	1.5	1.2	1.3	1.3	1.5	1.7	1.3	[illegible]	1.6	1.8	1.8	1.5	1.2	1.0	.8	1.1	1.4	1.8	1.6	1.7	1.9	1.7	1.4	1.6	1.3	1.4	1.5	1.5	1.5	1.2	1.6	1.8	2.4	2.1
2.2	1.8	1.8	1.4	1.1	.9	1.0	1.7	2.4	2.3	2.1	2.1	2.0	1.5	1.2	.8	.8	1.0	1.5	1.4	1.6	2.0	2.3	1.9	1.4	2.2	2.2	2.4	2.2	1.8	1.7	[illegible]	2.3	2.8	3.0	2.5
1.2	1.1	1.4	1.2	1.4	1.5	1.4	2.1	2.1	1.3	1.7	1.7	1.3	1.2	.7	.7	.9	1.1	1.3	1.2	.8	.9	1.5	1.2	.8	.9	2.6	2.2	2.5	2.3	2.1	1.8	2.6	3.1	2.1	1.7
1.9	2.4	2.4	2.9	2.3	2.3	2.7	2.0	1.4	1.8	2.2	1.9	1.5	1.7	1.3	1.5	3.0	3.9	3.6	2.1	1.2	2.1	2.1	1.3	1.5	3.4	2.6	4.8	6.2	3.3	3.5	2.9	2.0	1.5	1.7	2.0
2.5	1.9	1.9	2.5	3.1	3.4	3.8	3.1	3.1	3.9	4.8	4.3	3.8	3.7	3.7	3.9	5.5	6.0	6.7	6.5	6 3	3.6	2.9	1.1	2.8	4.0	5.0	5.5	4.7	4.9	5.0	4.9	4.9	4.0	3.5	2.6
4.1	3.5	4.0	3.7	2.9	2.8	2.5	2.7	3.1	1.8	4.7	4.7	4.7	5.1	3.7	3.6	3.4	3.0	5.0	6.6	5.9	2.7	1.9	2.2	2.6	3.4	4.2	5.1	5.4	5.2	4.8	5.5	5.8	4.0	4.0	3.3
5.6	4.2	4.4	3.7	2.3	1.5	1.5	.9	1.0	1.0	3.1	4.0	4.2	2.9	2.8	.9	.4	.5	.8	4.1	1.8	2.2	2.6	3.0	1.8	3.4	4.1	5.0	3.6	4.9	5.1	4.5	4.8	4.9	5.6	5.7
4.5	4.0	2.8	3.2	2.7	2.3	1.8	1.6	.8	.6	.6	1.7	3.3	1.4	2.1	1.6	1.0	.7	.5	1.0	1.2	1.4	1.5	1.6	1.0	1.9	1.1	1.1	1.0	1.7	2.2	1.7	1.8	1.8	2.2	2.7
2.3	3.2	2.8	2.7	2.7	2.5	2.5	1.5	1.4	1.0	1.0	1.9	2.6	2.1	1.6	1.7	1.4	1.7	1.2	.7	1.3	1.9	1.9	1.5	1.2	1.1	1.1	.8	.8	.7	.7	.9	1.4	1.8	1.7	1.9
1.5	1.9	2.1	1.9	2.0	1.9	1.7	1.6	1.6	1.4	1.8	1.9	1.5	1.6	1.4	2.0	1.8	1.7	1.6	1.3	1.2	1.4	1.7	1.7	1.8	1.5	1.0	1.1	1.4	1.3	1.0	.9	1.0	1.2	1.5	2.0
1.2	1.4	1.3	1.4	1.6	1.5	1.5	1.2	1.1	1.1	1.4	1.5	1.3	1.1	.9	1.1	1.0	1.4	1.3	1.5	1.4	1.2	1.4	1.3	1.5	1.5	1.3	1.0	1.3	1.3	1.5	1.5	1.5	1.3	1.2	1.2
.8	.9	1.1	1.2	1.0	1.1	1.0	.9	.8	.8	.8	1.0	1.4	1.0	.8	1.0	1.1	1.0	.9	1.0	.8	.9	.9	1.0	1.0	1.0	1.1	1.3	1.1	.9	.9	1.0	.9	1.0	.9	1.0
1.0	1.1	1.3	1.6	1.6	1.4	1.0	.8	.8	.8	.8	.9	.9	.9	.8	.8	1.0	1.0	.8	.7	.7	.7	.6	.5	.7	.9	.8	.7	.4	.3	.3	.3	.4	.6	.7	.8
.9	1.0	1.0	1.2	1.2	1.1	.9	.7	.6	.6	.6	.7	.7	.7	.7	.8	.6	.6	.5	.4	.3	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.4	.6	.7	.7	.8

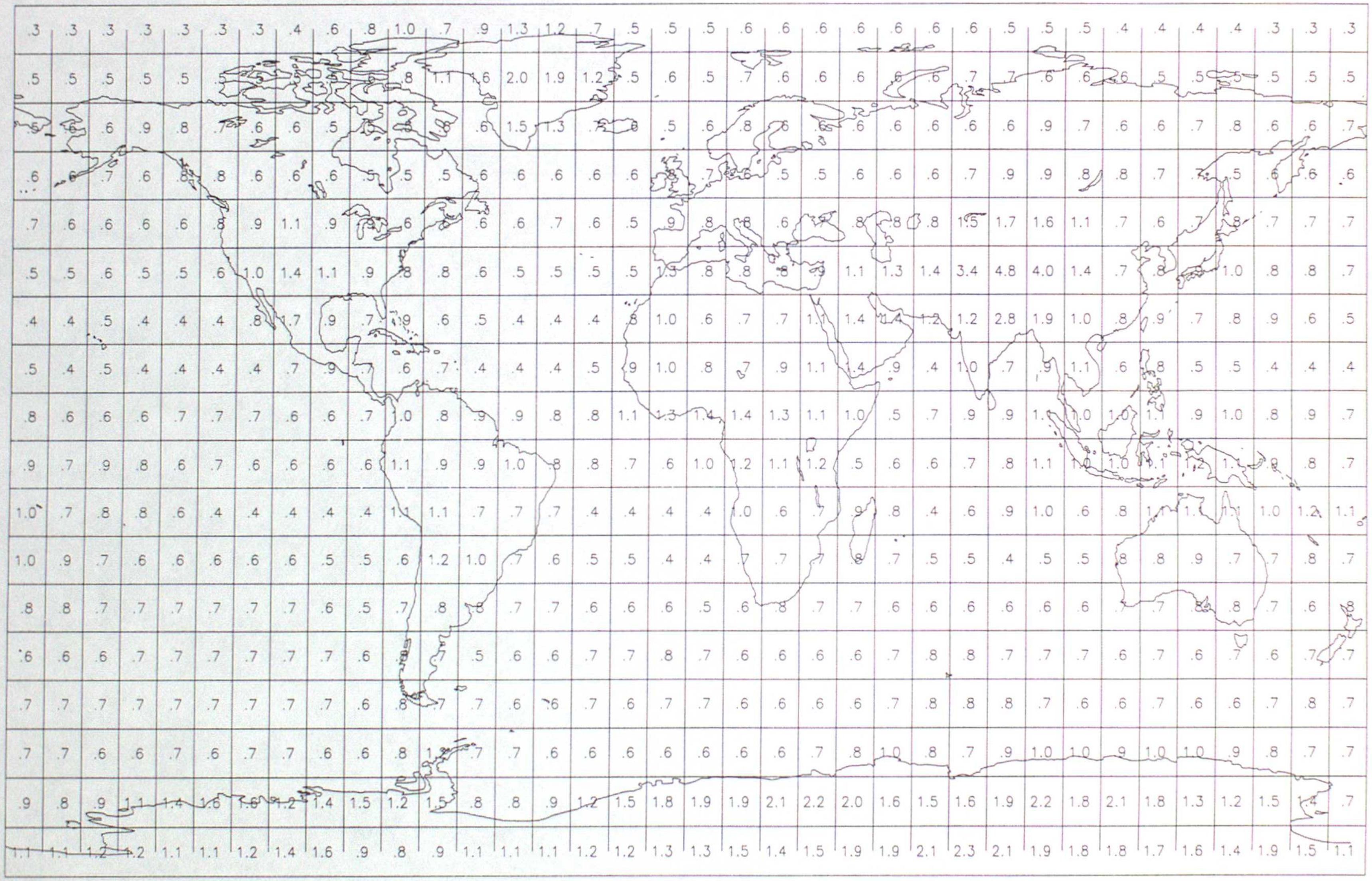
ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)
APRIL 2000 : AMSUA-5 Channel (700 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 34


.0 .0 .0 -.1 .0 .0 .0 .0 .0 .1 .3 -.1 -.5 -.8 -.4 .0 .2 .3 .1 .2 .4 .5 .3 .1 .4 .5 .4 .3 .3 .2 .2 .2 .2 .1 .0 .0
.2 .2 .1 .1 .1 .1 [illegible] [illegible] [illegible] [illegible] .4 .1 .9 -3.2 -3.6 -.5 .4 .4 .6 .4 .3 .4 .4 .3 .5 .5 .3 .0 .0 .3 .3 .2 .0 .1 .1 .2
.4 .3 .4 .4 .1 -.1 -.1 .1 .3 [illegible] .4 .4 .2 -1.0 -.2 .3 .4 .5 .4 .3 .4 .3 .3 .3 .2 .1 .2 .3 .2 .3 .2 .0 -.4 -.1 .1 .3
.5 .4 .4 .5 .3 .3 .2 .1 .4 .4 .2 .3 .4 .6 .6 .6 .5 [illegible] .2 .3 .5 .5 .4 .4 .2 .4 .6 .6 .7 .7 .5 .4 .2 .2 .3 .5
.4 .5 .6 .5 .4 .3 -.1 .2 .6 .2 .4 [illegible] .4 .5 .5 .5 .5 .4 .3 .3 .6 [illegible] .4 .2 .1 .1 .9 1.3 1.5 1.2 .8 .5 .3 .5 .5 .5
.5 .5 .5 .5 .5 .5 .3 .3 .5 .4 .2 .4 .5 .6 .6 .6 .5 .8 .3 .2 .2 .4 .5 .7 .3 -.2 2.8 3.0 1.3 .7 .2 [illegible] .5 .5 .4 .5
.6 .6 .6 .7 .6 .5 .3 .4 .2 .2 .1 .5 .7 .7 .6 .6 .3 .6 .4 .9 1.1 .4 .2 .1 .2 .3 1.1 .9 .7 .2 .2 .4 .4 .4 .5 .5
.6 .5 .4 .5 .5 .4 .5 .4 .4 .4 .4 .4 .7 .6 .5 .5 .3 .3 .6 1.0 1.4 .9 .4 .2 .5 .3 .4 .2 .1 .4 .2 .5 .6 .6 .5 .6
.4 .4 .4 .4 .4 .3 .3 .4 .4 .3 .3 .6 .3 .4 .4 .3 .2 .0 -.1 .1 .3 1.0 .8 .5 .5 .3 .1 -.1 .0 .0 -.1 .3 .3 .3 .4 .5
.3 .3 .2 .3 .4 .4 .4 .5 .4 .4 .4 .4 .3 .2 .2 .5 .5 .6 .4 .2 .5 .7 .6 .4 .5 .4 .3 -.1 -.1 -.2 -.3 -.3 -.1 .1 .3 .4
.1 .3 .2 .2 .5 .5 .5 .6 .7 .7 .8 1.0 .6 .7 .4 .6 .7 .6 .6 .7 .8 .6 .2 .3 .5 .4 .4 .2 .4 .4 .2 .2 .2 .2 .1 .0
.2 .3 .5 .5 .5 .5 .5 .5 .7 .7 .6 1.1 .4 .5 .5 .6 .6 .6 .6 .8 .8 .3 .4 .4 .5 .6 .7 .7 .6 .5 .3 .3 .3 .3 .4 .5
.4 .4 .5 .5 .5 .4 .4 .4 .5 .5 .6 .6 .2 .5 .5 .6 .6 .5 .5 .5 .6 .4 .5 .6 .5 .6 .6 .6 .5 .6 .4 .4 .4 .4 .5 .3
.5 .4 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .6 .5 .6 .5 .4 .5 .5 .5 .5 .4 .4 .5 .6 .5 .5 .5 .5 .5 .4 .5 .4 .3
.4 .5 .5 .5 .4 .5 .4 .5 .4 .5 .4 .4 .4 .5 .5 .5 .5 .4 .3 .4 .5 .5 .5 .5 .5 .6 .6 .5 .6 .5 .4 .4 .5 .5 .5 .4
.3 .4 .5 .4 .4 .3 .3 .4 .5 .6 .6 [illegible] -.1 .3 .4 .4 .3 .2 .3 .4 .3 .4 .3 .3 .4 .5 .4 .4 .5 .5 .5 .6 .2 .4 .3 .3
.2 .4 .3 .4 .4 .7 .9 .5 .9 1.1 .5 .5 -.2 .0 .1 .5 .3 .0 -.8 -.8 -.6 .0 .5 .0 -.5 -.5 .6 1.6 -.1 -.1 -.4 -.4 -.3 .0 .4 .0
-.1 -.2 -.1 .7 .6 .5 .6 1.5 2.2 .7 .1 -.3 -.3 -.4 -.3 -.2 -.1 -.2 -.4 -.7 -1.4 -1.5 -.6 .0 .2 .3 -.5 -1.0 -1.4 -1.5 -1.7 -1.7 -1.2 .1 .1 -.1

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
APRIL 2000 : AMSUA-5 channel (700 hPa)
NOAA-15, USING ALL OBSERVATIONS

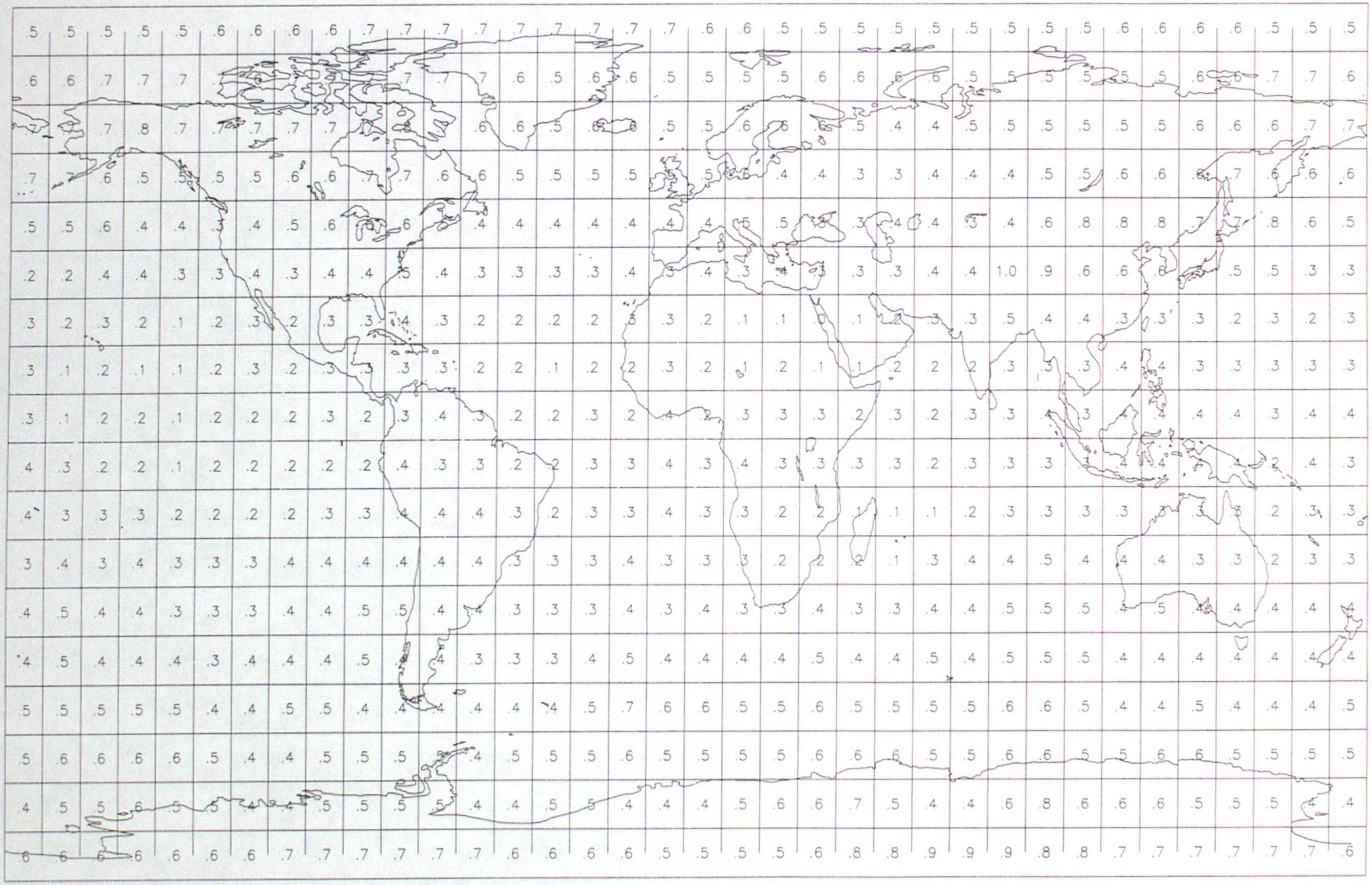
FIGURE 35


.3 .3 .3 .3 .3 .3 .3 .4 .6 .8 1.0 .7 .9 1.3 1.2 .7 .5 .5 .5 .6 .6 .6 .6 .6 .6 .6 .5 .5 .5 .4 .4 .4 .4 .3 .3 .3
.5 .5 .5 .5 .5 .5 .5 [illegible] [illegible] [illegible] .8 1.1 .6 2.0 1.9 1.2 .5 .6 .5 .7 .6 .6 .6 .6 .6 .7 .7 .6 .6 .6 .5 .5 .5 .5 .5 .5
.5 .6 .6 .9 .8 .7 .6 .6 .5 .5 [illegible] .8 .6 1.5 1.3 .7 .6 .5 .6 .8 .6 .6 .6 .6 .6 .6 .6 .9 .7 .6 .6 .7 .8 .6 .6 .7
.6 .6 .7 .6 .8 .8 .6 .6 .6 .5 .5 .5 .6 .6 .6 .6 .6 .8 .7 .6 .5 .5 .6 .6 .6 .7 .9 .9 .8 .8 .7 .7 .5 .6 .6 .6
.7 .6 .6 .6 .6 .8 .9 1.1 .9 .9 .6 .6 .6 .6 .7 .6 .5 .9 .8 .8 .6 .7 .8 .8 .8 1.5 1.7 1.6 1.1 .7 .6 .7 .8 .7 .7 .7
.5 .5 .6 .5 .5 .6 1.0 1.4 1.1 .9 .8 .8 .6 .5 .5 .5 .5 1.3 .8 .8 .8 .9 1.1 1.3 1.4 3.4 4.8 4.0 1.4 .7 .8 .9 1.0 .8 .8 .7
.4 .4 .5 .4 .4 .4 .8 1.7 .9 .7 .9 .6 .5 .4 .4 .4 .4 .4 .8 1.0 .6 .7 .7 1.1 1.4 1.4 1.2 1.2 2.8 1.9 1.0 .8 .9 .7 .8 .9 .6 .5
.5 .4 .5 .4 .4 .4 .4 .7 .9 .7 .6 .7 .4 .4 .4 .5 .9 1.0 .8 .7 .9 1.1 1.4 .9 .4 1.0 .7 .9 1.1 .6 .8 .5 .5 .4 .4 .4
.8 .6 .6 .6 .7 .7 .7 .6 .6 .7 1.0 .8 .9 .9 .8 .8 1.1 1.3 1.4 1.4 1.3 1.1 1.0 .5 .7 .9 .9 1.1 1.0 1.0 1.1 .9 1.0 .8 .9 .7
.9 .7 .9 .8 .6 .7 .6 .6 .6 .6 1.1 .9 .9 1.0 .8 .8 .7 .6 1.0 1.2 1.1 1.2 .5 .6 .6 .7 .8 1.1 1.0 1.0 1.1 1.2 1.1 .9 .8 .7
1.0 .7 .8 .8 .6 .4 .4 .4 .4 .4 1.1 1.1 .7 .7 .7 .4 .4 .4 .4 1.0 .6 .7 .9 .8 .4 .6 .9 1.0 .6 .8 1.1 1.1 1.1 1.0 1.2 1.1
1.0 .9 .7 .6 .6 .6 .6 .6 .5 .5 .6 1.2 1.0 .7 .6 .5 .5 .4 .4 .7 .7 .7 .8 .7 .5 .5 .4 .5 .5 .8 .8 .9 .7 .7 .8 .7
.8 .8 .7 .7 .7 .7 .7 .7 .6 .5 .7 .8 .8 .7 .7 .6 .6 .6 .5 .6 .8 .7 .7 .6 .6 .6 .6 .6 .6 .7 .7 .8 .8 .7 .6 .8
.6 .6 .6 .7 .7 .7 .7 .7 .7 .6 .8 .7 .5 .6 .6 .7 .7 .8 .7 .6 .6 .6 .6 .7 .8 .8 .7 .7 .7 .6 .7 .6 .7 .6 .7 .7
.7 .7 .7 .7 .7 .7 .7 .7 .7 .6 .8 .7 .7 .6 .6 .7 .6 .7 .7 .6 .6 .6 .6 .7 .8 .8 .8 .7 .6 .6 .7 .6 .6 .7 .8 .7
.7 .7 .6 .6 .7 .6 .7 .7 .6 .6 .8 1.2 .7 .7 .6 .6 .6 .6 .6 .6 .6 .7 .8 1.0 .8 .7 .9 1.0 1.0 .9 1.0 1.0 .9 .8 .7 .7
.9 .8 .9 1.1 1.4 1.6 1.6 1.2 1.4 1.5 1.2 1.5 .8 .8 .9 1.2 1.5 1.8 1.9 1.9 2.1 2.2 2.0 1.6 1.5 1.6 1.9 2.2 1.8 2.1 1.8 1.3 1.2 1.5 1.4 .7
1.1 1.1 1.2 1.2 1.1 1.1 1.2 1.4 1.6 .9 .8 .9 1.1 1.1 1.1 1.2 1.2 1.3 1.3 1.5 1.4 1.5 1.9 1.9 2.1 2.3 2.1 1.9 1.8 1.8 1.7 1.6 1.4 1.9 1.5 1.1

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C) FIGURE 36

APRIL 2000 : AMSUA-7 Channel (300 hPa)

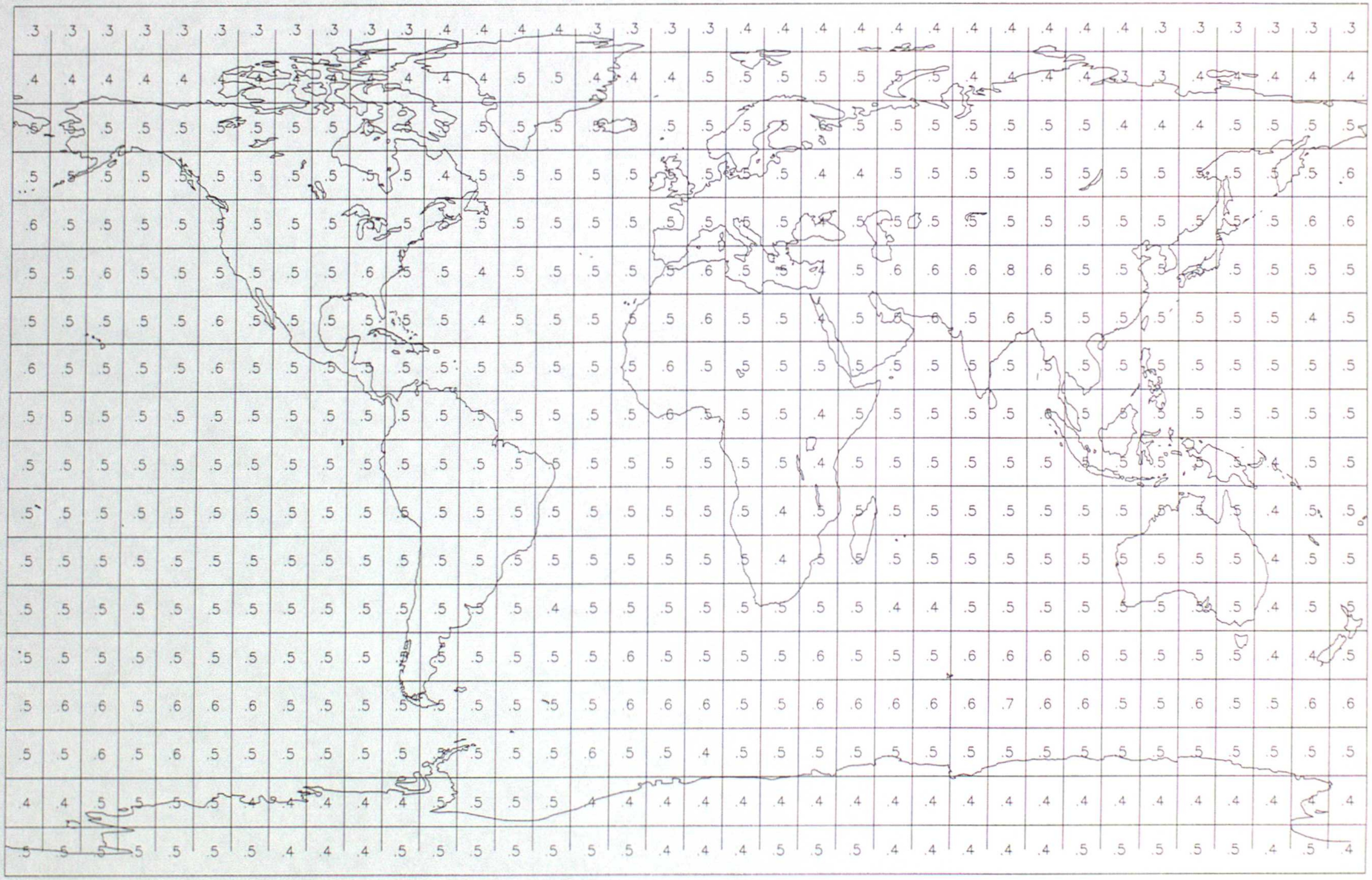
NOAA-15, USING ALL OBSERVATIONS



.5	.5	.5	.5	.5	.6	.6	.6	.6	.7	.7	.7	.7	.7	.7	.7	.7	.7	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.6	.5	.5	.5
.6	.6	.7	.7	.7		.6				.7	.7	.7	.6	.5	.6	.6	.5	.5	.5	.5	.6	.6	.6	.6	.5	.5	.5	.5	.5	.5	.6	.6	.7	.7	.6
.7	.7	.7	.8	.7	.7	.7	.7	.7	.7	.8		.6	.6	.5	.6	.6	.5	.5	.6	.6	.6	.5	.4	.4	.5	.5	.5	.5	.5	.5	.6	.6	.6	.7	.7
.7	.7	.6	.5	.5	.5	.5	.6	.6	.7	.7	.6	.6	.5	.5	.5	.5	.5	.5	.6	.4	.4	.3	.3	.4	.4	.4	.5	.5	.6	.6	.6	.7	.6	.6	.6
.5	.5	.6	.4	.4	.3	.4	.5	.6	.6	.6		.4	.4	.4	.4	.4	.4	.4	.5	.5	.3	.3	.4	.4	.3	.4	.6	.8	.8	.8	.7	.7	.8	.6	.5
.2	.2	.4	.4	.3	.3	.4	.3	.4	.4	.5	.4	.3	.3	.3	.3	.4	.3	.4	.3	.4	.3	.3	.3	.4	.4	1.0	.9	.6	.6	.6		.5	.5	.3	.3
.3	.2	.3	.2	.1	.2	.3	.2	.3	.3	.4	.3	.2	.2	.2	.2	.3	.3	.2	.1	.1	.0	.1	.2	.3	.3	.5	.4	.4	.3	.3	.3	.2	.3	.2	.3
.3	.1	.2	.1	.1	.2	.3	.2	.3	.3	.3	.3	.2	.2	.1	.2	.2	.3	.2	.1	.2	.1	.1	.2	.2	.2	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3
.3	.1	.2	.2	.1	.2	.2	.2	.3	.2	.3	.4	.3	.2	.2	.3	.2	.4	.2	.3	.3	.3	.2	.3	.2	.3	.3	.4	.3	.4	.4	.4	.4	.3	.4	.4
.4	.3	.2	.2	.1	.2	.2	.2	.2	.2	.4	.3	.3	.2	.2	.3	.3	.4	.3	.4	.3	.3	.3	.3	.2	.3	.3	.3	.3	.4	.4	.4	.4	.2	.4	.3
.4	3	.3	.3	.2	.2	.2	.2	.3	.3	.4	.4	.4	.3	.2	.3	.3	.4	.3	.3	.2	.2	.1	.1	.1	.2	.3	.3	.3	.3	.3	.3	.3	.2	.3	.3
.3	.4	.3	.4	.3	.3	.3	.4	.4	.4	.4	.4	.4	.3	.3	.3	.4	.3	.3	.3	.2	.2	.2	.1	.3	.4	.4	.5	.4	.4	.4	.3	.3	.2	.3	.3
.4	.5	.4	.4	.3	.3	.3	.4	.4	.5	.5	.4	.4	.3	.3	.3	.4	.3	.4	.3	.3	.4	.3	.3	.4	.4	.5	.5	.5	.4	.5	.4	.4	.4	.4	.4
.4	.5	.4	.4	.4	.3	.4	.4	.4	.5	.4	.4	.3	.3	.3	.4	.5	.4	.4	.4	.4	.5	.4	.4	.5	.4	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4
.5	.5	.5	.5	.5	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4	.5	.7	.6	.6	.5	.5	.6	.5	.5	.5	.5	.6	.6	.5	.4	.4	.5	.4	.4	.4	.5
.5	.6	.6	.6	.6	.5	.4	.4	.5	.5	.5	.5	.4	.5	.5	.5	.6	.5	.5	.5	.5	.6	.6	.6	.5	.5	.6	.6	.5	.5	.6	.6	.5	.5	.5	.5
.4	.5	.5	.6	.5	.5	.4	.4	.5	.5	.5	.5	.4	.4	.5	.5	.4	.4	.4	.5	.6	.6	.7	.5	.4	.4	.6	.8	.6	.6	.6	.5	.5	.5	.4	.4
.6	.6	.6	.6	.6	.6	.6	.7	.7	.7	.7	.7	.7	.6	.6	.6	.6	.5	.5	.5	.5	.6	.8	.8	.9	.9	.9	.8	.8	.7	.7	.7	.7	.7	.7	.6

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
APRIL 2000 : AMSUA-7 channel (300 hPa)
NOAA-15, USING ALL OBSERVATIONS

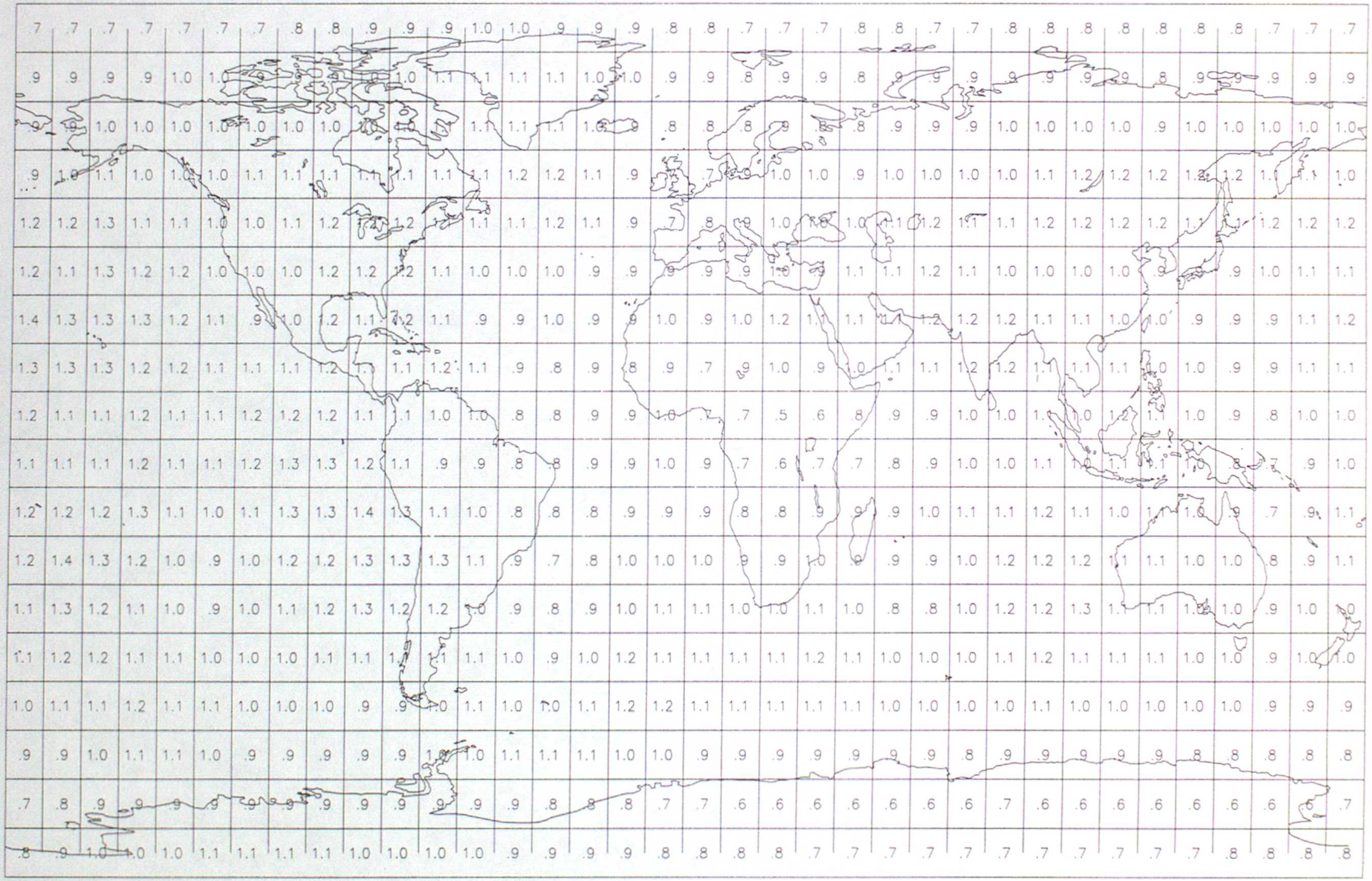
FIGURE 37



.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.3	.3	.4	.4	.4	.4	.4
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6
.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5		.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6
.5	.5	.6	.5	.5	.5	.5	.5	.5	.6	.5	.5	.4	.5	.5	.5	.5	.5	.6	.5	.5	.4	.5	.6	.6	.6	.8	.6	.5	.5	.5		.5	.5	.5	.5
.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.6	.5	.5	.4	.5	.6	.6	.5	.6	.5	.5	.5	.5	.5	.5	.5	.4	.5
.6	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.4	.5	.5	.5	.5	.5	[illegible]	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.6	.5	.5	.5	.6	.6	.6	.6	.5	.5	.5	.5	.4	.4	.5
.5	.6	.6	.5	.6	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.5	.5	.6	.6	.6	.6	.6	.7	.6	.6	.5	.5	.6	.5	.5	.6	.6
.5	.5	.6	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.4	.4	.5	.5	.5	.5	.4	.4	.4	.4	.4	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.4	.5	.4

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)
APRIL 2000 : AMSUA-9 Channel (100 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 38



.7	.7	.7	.7	.7	.7	.7	.8	.8	.9	.9	.9	1.0	1.0	.9	.9	.9	.8	.8	.7	.7	.7	.8	.8	.7	.7	.8	.8	.8	.8	.8	.8	.8	.7	.7	.7
.9	.9	.9	.9	1.0	[illegible]	.9	[illegible]	[illegible]	1.0	1.0	1.1	1.1	1.1	1.1	1.0	1.0	.9	.9	.8	.9	.9	.8	.9	.9	.9	.9	.9	.9	.9	.8	.9	.9	.9	.9	.9
.9	.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.0	.9	.8	.8	.8	.9	.8	.8	.9	.9	.9	1.0	1.0	1.0	1.0	.9	1.0	1.0	1.0	1.0	1.0
.9	1.0	1.1	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.1	.9	[illegible]	.7	.9	1.0	1.0	.9	1.0	1.0	1.0	1.0	1.1	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.0
1.2	1.2	1.3	1.1	1.1	1.0	1.0	1.1	1.2	1.2	1.2	1.1	1.1	1.1	1.2	1.1	.9	.7	.8	.9	1.0	1.0	1.0	1.1	1.2	1.1	1.1	1.2	1.2	1.2	1.2	1.1	1.1	1.2	1.2	1.2
1.2	1.1	1.3	1.2	1.2	1.0	1.0	1.0	1.2	1.2	1.2	1.1	1.0	1.0	1.0	.9	.9	.9	.9	.9	1.0	.9	1.1	1.1	1.2	1.1	1.0	1.0	1.0	1.0	.9	[illegible]	.9	1.0	1.1	1.1
1.4	1.3	1.3	1.3	1.2	1.1	.9	1.0	1.2	1.1	1.2	1.1	.9	.9	1.0	.9	.9	1.0	.9	1.0	1.2	1.1	1.1	1.1	1.2	1.2	1.2	1.1	1.1	1.0	1.0	.9	.9	.9	1.1	1.2
1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.2	1.1	1.1	1.2	1.1	.9	.8	.9	.8	.9	.7	.9	1.0	.9	1.0	1.1	1.1	1.2	1.2	1.1	1.1	1.1	1.0	1.0	.9	.9	1.1	1.1
1.2	1.1	1.1	1.2	1.1	1.1	1.2	1.2	1.2	1.1	1.1	1.0	1.0	.8	.8	.9	.9	1.0	.7	.7	.5	.6	.8	.9	.9	1.0	1.0	1.1	1.0	1.2	1.1	1.0	.9	.8	1.0	1.0
1.1	1.1	1.1	1.2	1.1	1.1	1.2	1.3	1.3	1.2	1.1	.9	.9	.8	.8	.9	.9	1.0	.9	.7	.6	.7	.7	.8	.9	1.0	1.0	1.1	1.0	1.1	1.1	1.0	.8	.7	.9	1.0
1.2	1.2	1.2	1.3	1.1	1.0	1.1	1.3	1.3	1.4	1.3	1.1	1.0	.8	.8	.8	.9	.9	.9	.8	.8	.9	.9	.9	1.0	1.1	1.1	1.2	1.1	1.0	1.1	1.0	.9	.7	.9	1.1
1.2	1.4	1.3	1.2	1.0	.9	1.0	1.2	1.2	1.3	1.3	1.3	1.1	.9	.7	.8	1.0	1.0	1.0	.9	.9	1.0	.9	.9	.9	1.0	1.2	1.2	1.2	1.1	1.1	1.0	1.0	.8	.9	1.1
1.1	1.3	1.2	1.1	1.0	.9	1.0	1.1	1.2	1.3	1.2	1.2	1.0	.9	.8	.9	1.0	1.1	1.1	1.0	1.0	1.1	1.0	.8	.8	1.0	1.2	1.2	1.3	1.1	1.1	1.0	1.0	.9	1.0	1.0
1.1	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.0	.9	1.0	1.2	1.1	1.1	1.1	1.1	1.2	1.1	1.0	1.0	1.0	1.1	1.2	1.1	1.1	1.1	1.0	1.0	.9	1.0	1.0
1.0	1.1	1.1	1.2	1.1	1.1	1.0	1.0	1.0	.9	.9	1.0	1.1	1.0	1.0	1.1	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.0	.9	.9	.9
.9	.9	1.0	1.1	1.1	1.0	.9	.9	.9	.9	.9	1.0	1.0	1.1	1.1	1.1	1.0	1.0	.9	.9	.9	.9	.9	.9	.9	.8	.9	.9	.9	.9	.9	.8	.8	.8	.8	.8
.7	.8	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.8	.8	.8	.7	.7	.6	.6	.6	.6	.6	.6	.6	.7	.6	.6	.6	.6	.6	.6	.6	.6	.7
.8	.9	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	.9	.9	.9	.9	.8	.8	.8	.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.8	.8

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
APRIL 2000 : AMSUA-9 channel (100 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 39

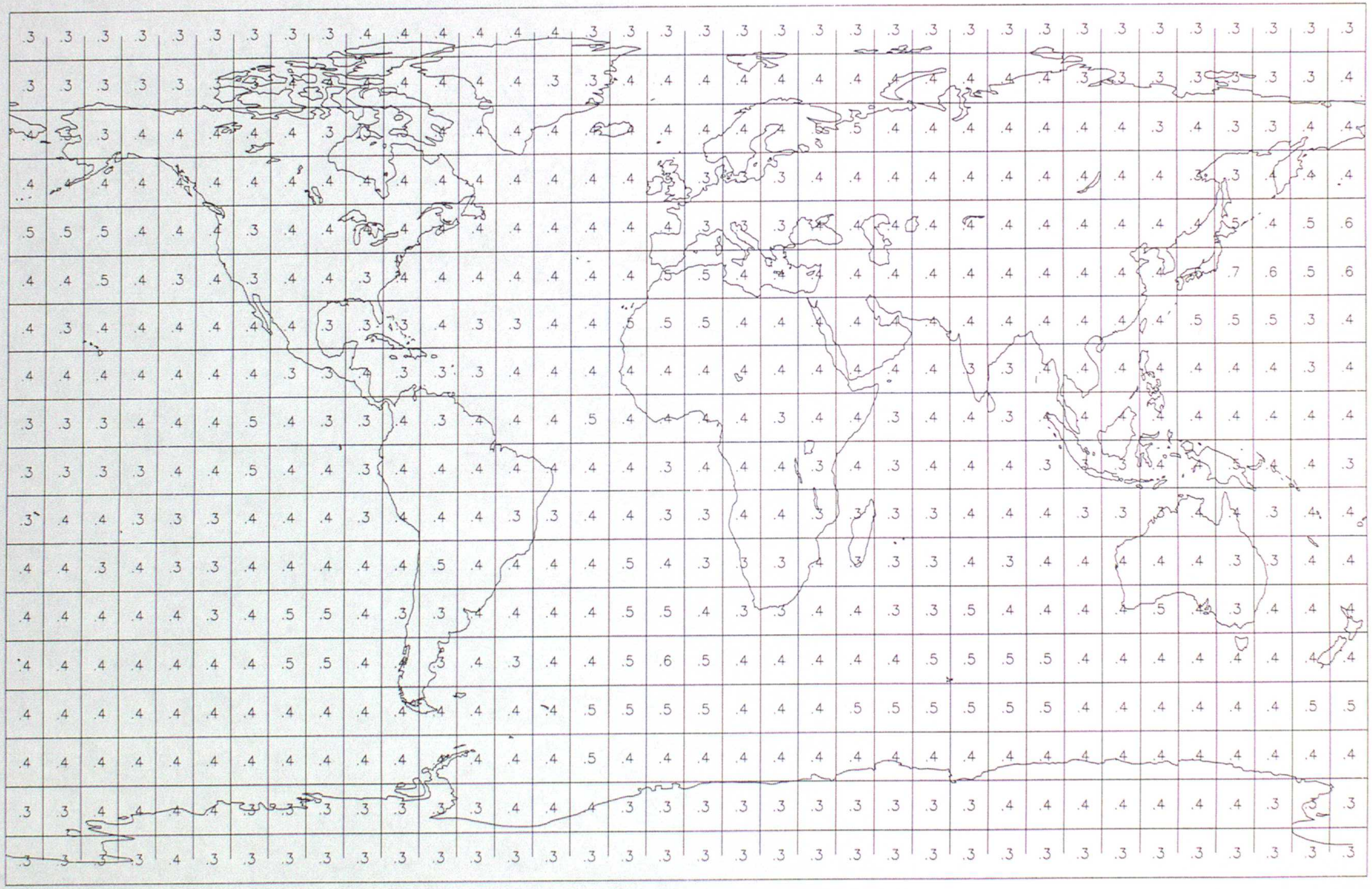


TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 m s^{-1} (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
13501	22.1	-24.2	ALL	P	SUR	883	0	0	0.9	0.7	1.2
13507	21.5	-23.5	ALL	P	SUR	127	0	0	0.8	0.1	0.8
13508	17.4	-22.7	ALL	P	SUR	14	0	0	0.5	1.0	1.2
13509	13.0	-23.8	ALL	P	SUR	611	0	0	1.5	0.7	1.6
13512	38.3	-77.0	ALL	P	SUR	19	19	100			
41520	24.9	-52.0	ALL	P	SUR	289	0	0	0.9	-0.4	1.0
41521	27.7	-69.9	ALL	P	SUR	278	0	0	0.8	0.0	0.8
41524	18.2	-72.1	ALL	P	SUR	181	0	0	1.0	0.7	1.2
41625	24.6	-72.6	ALL	P	SUR	263	0	0	0.9	0.3	1.0
41630	19.6	-49.9	ALL	P	SUR	276	0	0	0.7	0.2	0.8
41644	27.3	-45.6	ALL	P	SUR	284	0	0	0.8	-0.1	0.8
41651	30.2	-73.4	ALL	P	SUR	315	0	0	1.2	1.9	2.2
41671	25.4	-77.9	ALL	P	SUR	216	0	0	1.1	0.1	1.1
44607	54.2	-26.6	ALL	P	SUR	622	0	0	1.6	0.9	1.8
44608	35.5	-15.6	ALL	P	SUR	1518	0	0	1.0	0.1	1.1
44610	55.1	-34.7	ALL	P	SUR	1706	1	0	1.5	-0.2	1.5
44611	42.7	-47.9	ALL	P	SUR	610	0	0	1.4	0.8	1.6
44612	38.7	-34.1	ALL	P	SUR	575	0	0	0.9	0.5	1.0
44613	25.5	-38.4	ALL	P	SUR	722	4	1	0.9	0.2	0.9
44615	34.5	-46.8	ALL	P	SUR	592	0	0	0.9	0.5	1.1
44617	44.2	-44.2	ALL	P	SUR	586	0	0	1.2	0.5	1.3
44620	33.9	-47.6	ALL	P	SUR	579	0	0	0.9	0.4	1.0
44622	48.3	-43.4	ALL	P	SUR	615	1	0	1.5	0.2	1.5
44623	47.6	-40.4	ALL	P	SUR	585	0	0	1.6	0.1	1.6
44626	49.3	-17.2	ALL	P	SUR	1354	5	0	1.2	0.2	1.2
44627	45.9	-31.9	ALL	P	SUR	1281	8	1	1.2	-0.2	1.3
44628	38.4	-44.7	ALL	P	SUR	1059	6	1	1.1	0.3	1.2
44630	51.0	-22.4	ALL	P	SUR	1443	13	1	1.3	0.2	1.4
44721	59.4	-3.4	ALL	P	SUR	2082	9	0	1.1	-0.2	1.1
44723	46.5	-34.5	ALL	P	SUR	607	0	0	1.1	-0.3	1.2
44724	42.8	-33.7	ALL	P	SUR	563	0	0	1.1	0.8	1.4
44725	43.3	-53.3	ALL	P	SUR	408	1	0	1.4	-0.1	1.5
44726	32.4	-53.9	ALL	P	SUR	572	0	0	0.8	0.4	0.9
44727	32.2	-38.3	ALL	P	SUR	546	0	0	0.9	0.4	1.0
44729	46.8	-41.9	ALL	P	SUR	600	0	0	1.5	0.5	1.6
44730	51.8	-42.4	ALL	P	SUR	582	0	0	1.6	0.3	1.6
44741	55.3	-37.9	ALL	P	SUR	397	1	0	1.3	-0.3	1.3
44743	51.0	-35.6	ALL	P	SUR	472	0	0	1.7	-1.0	1.9
44765	31.0	-58.3	ALL	P	SUR	489	4	1	1.1	-0.1	1.1
44773	47.8	-36.8	ALL	P	SUR	1177	22	2	1.7	-0.7	1.8
44777	58.0	-16.1	ALL	P	SUR	1972	18	1	1.2	-0.1	1.2
46681	35.0	-76.3	ALL	P	SUR	79	50	63	10.9	-2.2	11.1
62507	39.2	-29.1	ALL	P	SUR	1147	18	2	1.0	-0.3	1.1
62508	41.4	-18.2	ALL	P	SUR	1099	55	5	1.6	-0.5	1.7
62509	46.0	-6.0	ALL	P	SUR	1049	0	0	1.4	-0.3	1.5
62512	45.7	-20.2	ALL	P	SUR	210	16	8	1.3	0.3	1.3
62513	44.2	-20.4	ALL	P	SUR	156	0	0	1.4	-0.7	1.5
62514	48.7	-19.9	ALL	P	SUR	464	3	1	1.8	0.6	1.9
62515	47.7	-19.4	ALL	P	SUR	357	0	0	1.4	0.3	1.5
62516	46.6	-20.0	ALL	P	SUR	364	0	0	1.4	0.1	1.4
62520	30.8	-35.0	ALL	P	SUR	922	6	1	0.9	-0.3	1.0
62596	59.6	-25.3	ALL	P	SUR	604	0	0	1.2	0.6	1.4
62597	55.7	-14.6	ALL	P	SUR	1707	10	1	1.5	0.0	1.5
64517	57.0	-37.6	ALL	P	SUR	1212	2	0	2.4	-0.2	2.4
64530	61.5	-12.8	ALL	P	SUR	1407	11	1	1.4	-0.6	1.5
64546	51.2	-35.7	ALL	P	SUR	1206	5	0	1.7	-0.5	1.8
64698	57.0	-43.1	ALL	P	SUR	1076	0	0	1.2	-0.7	1.4
64699	61.2	-54.8	ALL	P	SUR	1129	0	0	1.4	-0.5	1.5
65598	64.5	-32.2	ALL	P	SUR	1516	13	1	1.6	-0.1	1.6
65599	63.8	-34.9	ALL	P	SUR	2183	11	1	1.3	0.3	1.4

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
65600	54.2	-38.4	ALL	P	SUR	464	7	2	1.3	-1.1	1.7
65601	60.1	-34.5	ALL	P	SUR	1292	22	2	1.2	-0.5	1.3
65602	58.9	-40.3	ALL	P	SUR	1320	19	1	1.8	-0.4	1.8
65603	62.3	-26.1	ALL	P	SUR	31	6	19	3.1	5.4	6.2
WIND SPEED											
41521	27.7	-69.9	ALL	SPEED	SUR	277	0	0	1.3	-0.5	1.4
41625	24.6	-72.6	ALL	SPEED	SUR	177	0	0	1.9	-2.4	3.1
41630	19.6	-49.9	ALL	SPEED	SUR	265	0	0	1.8	0.0	1.8
41644	27.3	-45.6	ALL	SPEED	SUR	2	0	0	1.3	-8.4	8.5
41651	30.2	-73.4	ALL	SPEED	SUR	20	0	0	2.5	1.7	3.0
44607	54.2	-26.6	ALL	SPEED	SUR	613	0	0	2.5	1.6	3.0
44721	59.4	-3.4	ALL	SPEED	SUR	1563	0	0	2.3	-1.5	2.7
44724	42.8	-33.7	ALL	SPEED	SUR	553	0	0	2.3	0.6	2.4
44726	32.4	-53.9	ALL	SPEED	SUR	562	0	0	1.6	-0.7	1.8
44727	32.2	-38.3	ALL	SPEED	SUR	529	0	0	1.7	0.6	1.8
44777	58.0	-16.1	ALL	SPEED	SUR	1540	0	0	2.8	-3.9	4.8
62506	36.6	-17.8	ALL	SPEED	SUR	598	0	0	1.8	0.7	1.9
62508	41.4	-18.2	ALL	SPEED	SUR	862	0	0	1.8	0.1	1.8
62597	55.7	-14.6	ALL	SPEED	SUR	1285	0	0	3.0	-1.3	3.3
WIND DIRECTION											
41521	27.7	-69.9	ALL	DIRN.	SUR	201	0	0	17.6	-12.5	21.6
41625	24.6	-72.6	ALL	DIRN.	SUR	83	0	0	9.8	1.8	10.0
41630	19.6	-49.9	ALL	DIRN.	SUR	235	0	0	20.8	6.3	21.7
41651	30.2	-73.4	ALL	DIRN.	SUR	7	0	0	39.0	18.7	43.3
44607	54.2	-26.6	ALL	DIRN.	SUR	546	0	0	20.7	3.0	20.9
44721	59.4	-3.4	ALL	DIRN.	SUR	978	0	0	16.0	3.2	16.3
44724	42.8	-33.7	ALL	DIRN.	SUR	458	0	0	26.3	-0.1	26.3
44726	32.4	-53.9	ALL	DIRN.	SUR	305	0	0	17.3	1.0	17.3
44727	32.2	-38.3	ALL	DIRN.	SUR	238	0	0	21.4	0.7	21.4
44777	58.0	-16.1	ALL	DIRN.	SUR	1231	0	0	15.7	9.3	18.3
62506	36.6	-17.8	ALL	DIRN.	SUR	528	0	0	19.3	-18.6	26.9
62508	41.4	-18.2	ALL	DIRN.	SUR	717	0	0	21.3	2.1	21.4
62597	55.7	-14.6	ALL	DIRN.	SUR	967	0	0	39.2	-0.9	39.2

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures:
Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	3192	0	4	1.5	-0.1	3193	0	5	0	8.0	0.9
ACA	1453	0	2	1.7	0.0	1450	0	3	0	6.9	0.7
AEA	185	1	5	2.1	0.7	184	0	5	0	7.8	1.0
AEL	400	0	11	1.8	-0.6	405	0	13	0	8.2	0.5
AEY	57	0	4	1.5	0.6	57	2	12	0	11.4	0.9
AFL	425	1	4	1.7	0.1	423	1	5	0	8.2	0.4
AFR	1165	0	6	1.6	-0.2	1193	0	7	0	8.3	0.6
AIH	160	1	4	1.8	-0.2	159	0	4	0	9.0	1.8
AJM	115	0	6	1.6	-0.2	112	1	6	0	6.3	0.3
AMM	134	1	12	1.9	0.0	132	0	12	0	8.5	-0.2
AMX	210	3	6	1.8	0.4	208	1	6	0	10.5	1.0
ANZ	205	0	14	1.9	-1.0	202	0	14	0	7.4	0.5
AOM	451	1	4	1.5	0.5	453	0	4	0	7.3	0.9
AUA	22	0	5	2.1	0.4	22	0	5	0	6.7	0.5
AVA	194	2	6	1.9	0.4	195	0	3	0	7.8	1.4
AZA	660	1	7	1.9	0.4	670	0	8	0	9.5	1.1
BAF	36	0	0	1.5	-0.5	36	0	3	0	9.3	0.0
BAL	211	0	14	1.6	-0.1	212	0	15	0	7.4	1.3
BAW	1379	0	10	2.0	-0.1	1377	0	9	0	6.8	0.9
BBB	32	0	3	2.0	-0.3	35	0	9	0	12.4	0.0
BLX	31	0	3	2.2	0.1	32	0	6	0	10.4	-1.8
BWA	52	0	0	2.0	1.4	52	0	2	0	7.3	-0.5
CDN	471	0	1	1.6	0.0	466	0	3	0	8.0	0.6
CFC	27	0	11	1.5	0.1	28	0	14	0	8.8	2.8
CFG	583	0	3	1.9	-1.0	581	0	3	0	7.6	0.8
CGB	22	0	0	1.2	0.4	22	0	5	0	9.2	-1.1
CKS	22	0	5	1.3	0.6	24	0	13	0	10.6	0.0
CLX	283	0	2	1.6	-0.6	284	0	3	0	7.6	0.0
CMM	79	0	0	1.2	0.1	78	1	4	0	6.8	1.5
COA	648	0	5	1.9	-0.3	636	0	9	0	11.0	1.8
CRL	382	0	3	2.0	0.7	390	0	4	0	8.7	0.8
CTB	102	0	4	1.6	-0.5	102	2	5	0	5.8	0.7
CUB	148	0	5	2.3	1.3	149	1	9	0	10.7	0.6
DAL	1706	0	15	1.8	-0.7	1736	0	16	0	8.9	1.0
DBY	326	0	2	1.6	-0.4	328	1	4	0	8.0	0.6
DCS	84	0	1	2.0	-0.4	87	0	3	0	7.4	1.6
DLH	1599	0	4	1.7	-0.1	1597	0	4	0	6.8	0.7
EEZ	157	2	100	5.0	3.5	151	0	14	0	8.6	0.8
ELY	115	2	5	1.5	0.0	113	1	6	0	11.0	0.4
EWW	59	0	2	1.8	0.3	61	0	2	0	8.6	2.1
FDX	584	1	5	1.6	0.3	592	0	4	0	8.0	0.9
FIN	329	0	4	1.6	0.2	318	0	4	0	8.3	1.2
GAF	65	2	2	1.9	-0.8	66	2	9	0	10.5	0.0
GCO	37	0	11	1.8	-0.2	36	0	14	0	15.4	7.6
GRL	73	0	3	1.5	-0.2	72	0	4	0	7.1	-0.2
GTI	180	1	7	1.7	-0.7	187	0	7	0	7.5	0.3
HLF	54	0	6	1.9	-0.8	50	0	4	0	8.6	1.0
IBE	1244	1	9	2.0	0.4	1235	0	11	0	9.8	0.7
ICE	1312	0	2	1.4	-0.1	1285	0	1	0	6.1	1.1
IWD	54	0	4	1.7	-0.2	50	0	6	0	9.9	0.9
JKK	288	0	8	1.7	-0.3	275	1	9	0	9.2	0.9
JMC	69	0	12	1.8	1.3	73	0	12	0	7.9	1.3
KLM	1868	0	8	1.6	0.0	1870	0	9	0	8.2	0.9
LDA	138	1	4	1.6	0.1	143	0	3	0	7.6	0.4
LDI	484	0	100	2.2	-0.3	490	0	11	0	8.9	1.3
LIB	139	2	5	1.8	0.8	143	1	7	0	9.6	1.3
LOT	120	1	5	1.8	-0.9	115	1	10	0	10.0	0.3
LTU	556	1	4	1.7	-0.2	563	0	6	0	8.7	1.2
MAS	50	0	12	2.3	0.4	52	0	13	0	7.6	1.3

		TEMPERATURE					WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
MON	71	1	3	1.7	-0.4	70	0	3	0	6.8	0.5
MPD	90	0	7	1.6	0.3	90	2	11	0	8.9	0.5
MPH	490	0	3	2.0	-0.6	483	0	3	0	7.3	0.5
NCA	26	0	8	1.7	0.2	26	0	8	0	7.2	0.9
NVR	40	0	0	1.3	0.0	39	0	0	0	4.4	0.7
NWA	3613	1	2	1.8	0.3	3526	0	3	0	7.9	0.7
OAL	36	0	6	2.4	-0.3	37	0	5	0	6.4	-0.4
PAC	120	0	5	1.6	0.0	130	0	64	0	15.0	3.5
RAM	47	0	4	2.0	-0.8	47	2	9	0	9.5	1.8
RCH	133	0	2	2.0	0.7	138	0	7	0	12.3	0.6
RJA	30	0	3	1.4	-0.2	30	0	3	0	6.6	2.4
RRR	62	0	6	1.7	0.4	62	0	6	0	6.3	1.0
RZO	59	0	12	1.2	-0.4	58	0	12	0	7.6	0.7
SAS	1463	0	33	1.5	-0.3	1458	0	34	0	7.8	0.4
SIA	104	1	7	2.2	-1.3	105	0	6	0	7.3	0.5
SLR	149	0	13	1.4	-0.9	151	1	17	0	8.7	1.6
SNB	60	0	2	1.5	-0.4	60	0	5	0	10.5	-1.5
SVA	110	0	3	1.9	0.1	123	0	2	0	7.6	0.8
SWR	76	1	4	1.5	0.3	77	0	6	0	7.7	0.6
TAP	386	1	6	1.5	-0.1	382	1	7	0	8.6	1.0
TOW	66	0	8	1.9	0.2	67	0	7	0	8.1	0.4
TSC	44	2	5	2.0	0.5	43	0	12	0	14.9	2.8
TWA	854	1	5	1.7	0.0	832	0	5	0	7.5	0.8
UAL	2134	0	100	1.9	-0.1	2168	0	100	0	6.8	0.6
UPS	594	1	12	1.7	0.4	594	0	13	0	8.4	0.5
USA	290	1	5	1.7	0.0	249	0	6	0	8.2	0.7
VIR	606	0	2	1.6	-0.2	618	0	4	0	7.9	0.8
VKG	120	0	3	1.7	0.0	121	1	5	0	7.3	0.9
WOA	98	1	5	1.4	0.4	97	0	6	0	7.5	0.9
BA	2228	0	9	1.3	0.4	2224	0	9	0	5.3	0.7
EU	16928	0	12	1.3	-0.2	16928	0	12	0	5.6	0.6
KL	4002	0	10	1.4	0.7	3982	0	10	0	5.5	1.0
N	340	1	5	2.4	0.9	345	0	3	0	6.7	0.9
US ACARS	14991	0	19	1.5	0.5	14989	0	18	0	6.3	0.8

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	6	0	6.9	13.1	11.2
DBBH	12	Z	100	7	0	12.0	27.3	24.6
ELML7	00	Z	100	13	0	19.1	28.6	21.3
ELML7	12	Z	100	13	0	21.1	31.7	23.6
FNOR	00	Z	100	11	0	11.4	32.7	30.6
FNOR	12	Z	100	10	0	22.3	31.4	22.1
FNOU	00	Z	100	12	0	13.8	46.5	44.4
FNOU	12	Z	100	8	0	10.0	36.8	35.4
FNPH	00	Z	100	10	0	13.0	25.6	22.1
FNPH	12	Z	100	13	0	13.3	14.2	5.1
FNRS	00	Z	100	9	0	7.1	20.1	18.8
FNRS	12	Z	100	7	0	12.6	14.2	6.6
LDWR	00	Z	100	23	0	16.7	16.7	0.0
LDWR	12	Z	100	27	0	17.7	18.4	-5.1
OVYA2	00	Z	100	11	0	8.6	15.0	12.3
OVYA2	12	Z	100	9	0	24.4	31.2	19.6
OXTS2	00	Z	100	3	0	5.2	8.4	-6.7
OXTS2	12	Z	100	6	0	7.2	9.9	-6.8
OXYH2	00	Z	100	9	0	23.5	24.3	-5.9
OXYH2	12	Z	100	12	0	9.9	9.9	0.0
ZCBP6	00	Z	100	6	0	10.0	17.9	14.8
ZCBP6	12	Z	100	5	0	11.8	14.4	8.2
03953	00	Z	100	28	0	9.7	26.1	24.3
03953	12	Z	100	30	0	14.6	19.4	12.8
04018	00	Z	100	28	0	12.0	16.2	10.9
04018	12	Z	100	29	0	54.1	54.2	-3.0
04220	00	Z	100	28	0	11.1	15.3	10.6
04220	12	Z	100	30	0	13.9	17.1	9.9
04270	00	Z	100	28	0	12.4	12.5	-1.5
04270	12	Z	100	29	0	16.4	16.4	0.3
04339	00	Z	100	28	0	9.1	16.4	13.7
04339	12	Z	100	28	0	10.8	14.1	9.1
04360	00	Z	100	29	0	19.3	20.6	7.3
04360	12	Z	100	26	0	9.0	9.1	1.7
08001	00	Z	100	21	0	25.0	25.9	-6.7
08001	12	Z	100	26	0	25.6	34.6	-23.2
08508	00	Z	100	29	0	14.7	24.6	19.8
08508	12	Z	100	27	0	15.9	24.5	18.7
08522	12	Z	100	24	0	11.0	13.1	7.1
08594	12	Z	100	23	0	22.8	27.8	16.0
60020	00	Z	100	2	0	2.0	31.1	31.0
71600	00	Z	100	28	0	9.8	19.9	17.3
71600	12	Z	100	30	0	11.4	15.7	10.8
72201	00	Z	100	29	0	23.5	40.8	33.4
72201	12	Z	100	29	0	11.1	41.7	40.2
72402	00	Z	100	27	0	15.2	37.5	34.3
72402	12	Z	100	29	0	18.6	55.5	52.3
74494	00	Z	100	22	0	11.0	17.8	14.0
74494	12	Z	100	24	0	11.4	11.5	-1.0
78016	12	Z	100	26	0	12.8	38.9	36.8

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	500	8	0	6.0	6.9	-3.4
DBBH	12	Z	500	7	0	5.5	7.9	-5.7
ELML7	00	Z	500	18	0	13.9	21.3	16.1
ELML7	12	Z	500	19	0	14.6	19.3	12.6
FNOR	00	Z	500	12	0	5.7	12.4	11.0
FNOR	12	Z	500	11	0	12.6	19.5	14.8
FNOU	00	Z	500	13	0	10.5	15.6	11.6
FNOU	12	Z	500	12	0	9.3	15.2	12.0
FNPH	00	Z	500	12	0	8.6	12.0	8.4
FNPH	12	Z	500	14	0	11.5	12.1	3.6
FNRS	00	Z	500	11	0	8.4	9.1	3.6
FNRS	12	Z	500	9	0	9.4	10.6	4.9
LDWR	00	Z	500	26	0	9.7	9.9	2.0
LDWR	12	Z	500	29	0	15.3	16.9	-7.1
OVYA2	00	Z	500	14	0	7.8	11.2	8.0
OVYA2	12	Z	500	10	0	11.7	14.9	9.3
OXTS2	00	Z	500	4	0	14.7	16.0	6.3
OXTS2	12	Z	500	6	0	15.4	18.7	-10.5
OXYH2	00	Z	500	9	0	17.5	17.5	0.6
OXYH2	12	Z	500	12	0	19.6	20.1	4.3
S6LA	12	Z	500	1	0	0.0	81.0	81.0
ZCBP6	00	Z	500	6	0	6.8	10.1	7.5
ZCBP6	12	Z	500	5	0	16.3	16.5	2.4
03953	00	Z	500	28	0	8.4	14.8	12.2
03953	12	Z	500	30	0	8.0	11.3	8.0
04018	00	Z	500	28	0	7.6	13.7	11.4
04018	12	Z	500	30	0	22.1	22.6	4.9
04220	00	Z	500	28	0	8.9	10.8	6.1
04220	12	Z	500	30	0	14.6	14.6	0.7
04270	00	Z	500	28	0	12.3	13.7	6.2
04270	12	Z	500	29	0	11.7	11.7	-0.6
04339	00	Z	500	28	0	10.1	14.6	10.6
04339	12	Z	500	29	0	10.8	10.9	1.9
04360	00	Z	500	29	0	13.1	14.5	6.2
04360	12	Z	500	27	0	8.5	8.8	2.1
08001	00	Z	500	28	0	17.0	17.4	3.7
08001	12	Z	500	30	0	19.4	22.2	-10.8
08508	00	Z	500	29	0	8.7	10.6	6.1
08508	12	Z	500	29	0	11.3	13.9	8.2
08522	12	Z	500	29	0	10.3	13.2	8.3
08594	12	Z	500	24	0	6.3	7.9	4.8
60020	00	Z	500	28	0	9.7	15.5	12.1
60020	12	Z	500	28	0	13.6	18.0	11.8
71600	00	Z	500	28	0	7.4	12.6	10.3
71600	12	Z	500	30	0	10.3	11.9	6.0
72201	00	Z	500	29	0	7.7	9.7	6.0
72201	12	Z	500	30	0	9.1	9.4	-2.6
72402	00	Z	500	28	0	12.9	15.9	9.3
72402	12	Z	500	29	0	10.8	15.0	10.3
74494	00	Z	500	26	0	10.7	12.9	7.2
74494	12	Z	500	27	0	9.8	10.2	2.7
78016	12	Z	500	28	0	9.2	20.7	18.6

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in $m\ s^{-1}$
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	100	18	0	0	10.9	-5.6	2.8
DBBH	12	V	100	15	0	0	10.5	-5.9	1.3
ELML7	00	V	100	13	0	0	4.3	-0.3	0.4
ELML7	12	V	100	11	0	0	4.9	-1.8	1.0
FNOR	00	V	100	12	0	0	4.9	0.3	1.2
FNOR	12	V	100	10	0	0	4.3	0.5	0.8
FNOU	00	V	100	12	0	0	3.8	-0.9	-0.9
FNOU	12	V	100	6	0	0	9.7	-2.5	-2.0
FNPH	00	V	100	8	0	0	5.2	2.0	2.1
FNPH	12	V	100	7	0	0	3.1	0.6	-1.1
FNRS	00	V	100	7	0	0	5.2	0.1	0.2
FNRS	12	V	100	5	0	0	5.4	0.7	1.2
LDWR	00	V	100	26	0	0	2.3	0.0	0.6
LDWR	12	V	100	29	0	3	4.5	0.6	-0.1
OVYA2	00	V	100	7	0	0	3.4	1.0	0.3
OVYA2	12	V	100	8	0	0	2.7	-0.5	-0.9
OXTS2	00	V	100	3	0	0	7.1	-2.7	3.3
OXTS2	12	V	100	5	0	0	3.3	-0.7	-0.2
OXYH2	00	V	100	8	0	14	6.7	1.4	-1.5
OXYH2	12	V	100	12	0	0	2.6	0.5	1.3
ZCBP6	00	V	100	4	0	0	2.4	0.3	-0.3
ZCBP6	12	V	100	4	0	0	4.5	1.7	1.0
03953	00	V	100	28	0	0	3.5	0.4	0.7
03953	12	V	100	30	0	0	3.3	0.0	0.8
04018	00	V	100	27	0	3	5.7	-0.5	1.9
04018	12	V	100	28	0	0	3.9	0.0	-0.8
04220	00	V	100	27	0	0	3.9	-0.1	-0.6
04220	12	V	100	29	0	0	3.1	-0.3	0.0
04270	00	V	100	26	0	0	3.4	0.3	0.7
04270	12	V	100	26	0	0	3.5	-0.6	0.7
04339	00	V	100	26	0	3	6.5	2.0	-0.9
04339	12	V	100	28	0	0	5.0	-0.3	-0.5
04360	00	V	100	30	0	0	3.8	0.7	0.6
04360	12	V	100	25	0	0	4.4	-1.7	0.1
08001	00	V	100	17	0	0	4.3	1.0	0.9
08001	12	V	100	19	0	0	4.0	0.0	0.8
08508	00	V	100	17	0	0	3.4	0.3	0.4
08508	12	V	100	12	0	0	3.4	1.3	-0.1
08522	12	V	100	24	0	0	5.5	2.5	1.6
08594	12	V	100	23	0	100	6.9	-0.4	5.0
71600	00	V	100	29	0	0	4.3	1.2	-0.6
71600	12	V	100	30	0	0	4.2	0.6	-0.9
72201	00	V	100	30	0	0	4.0	0.3	0.2
72201	12	V	100	29	0	0	4.6	0.0	-0.6
72402	00	V	100	27	0	0	4.1	0.2	0.2
72402	12	V	100	27	0	0	4.7	1.1	-0.2
74494	00	V	100	21	0	0	4.3	0.5	0.8
74494	12	V	100	24	0	0	3.2	0.3	0.6
78016	12	V	100	25	0	0	5.9	2.3	2.1

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: APRIL 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:UBIAS,VBIAS: Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	500	17	0	0	3.5	-0.4	1.1
DBBH	12	V	500	17	0	0	4.0	1.5	1.1
ELML7	00	V	500	18	0	0	4.7	-0.4	0.8
ELML7	12	V	500	20	0	0	5.0	0.4	0.2
FNOR	00	V	500	13	0	0	5.2	1.4	0.3
FNOR	12	V	500	10	0	0	4.2	-0.3	0.9
FNOU	00	V	500	13	0	0	4.5	1.0	-0.5
FNOU	12	V	500	12	0	0	4.4	-1.2	0.5
FNPH	00	V	500	9	0	0	3.6	0.7	-0.5
FNPH	12	V	500	9	0	0	3.5	-0.6	-0.7
FNRS	00	V	500	7	0	0	4.2	-2.4	-1.0
FNRS	12	V	500	7	0	0	3.6	1.3	0.6
LDWR	00	V	500	27	0	0	3.5	-0.5	0.0
LDWR	12	V	500	29	0	3	7.4	-0.3	-0.7
OVYA2	00	V	500	7	0	0	3.4	0.8	1.3
OVYA2	12	V	500	8	0	0	4.6	0.7	1.0
OXTS2	00	V	500	4	0	0	1.9	0.7	0.3
OXTS2	12	V	500	6	0	0	3.5	0.7	-1.2
OXYH2	00	V	500	8	0	14	8.7	-1.9	-3.2
OXYH2	12	V	500	12	0	0	3.8	-1.0	0.2
S6LA	12	V	500	1	0	0	5.6	4.9	-2.8
ZCBP6	00	V	500	5	0	0	2.4	-0.7	-0.4
ZCBP6	12	V	500	4	0	0	6.7	-0.9	-3.7
03953	00	V	500	30	0	0	3.8	0.3	-0.6
03953	12	V	500	30	0	0	3.9	1.4	0.3
04018	00	V	500	27	0	0	5.0	-0.4	1.1
04018	12	V	500	30	0	0	5.2	0.8	-0.1
04220	00	V	500	25	0	0	5.6	1.4	0.3
04220	12	V	500	29	0	0	4.3	1.3	0.9
04270	00	V	500	28	0	0	4.0	0.5	0.0
04270	12	V	500	25	0	0	4.2	-1.3	-0.9
04339	00	V	500	28	0	0	5.1	-1.3	0.0
04339	12	V	500	29	0	0	5.9	0.4	-1.1
04360	00	V	500	30	0	0	5.1	-0.7	0.9
04360	12	V	500	26	0	0	4.7	-0.6	0.4
08001	00	V	500	29	0	0	6.2	0.9	1.5
08001	12	V	500	30	0	0	5.7	0.4	-0.6
08508	00	V	500	18	0	0	3.7	0.5	0.4
08508	12	V	500	15	0	0	5.2	-0.6	-1.0
08522	12	V	500	29	0	0	5.4	1.7	-0.2
08594	12	V	500	23	0	100	4.3	-0.6	0.3
60020	00	V	500	25	0	0	6.5	1.3	0.5
60020	12	V	500	25	0	0	4.6	0.0	-1.0
71600	00	V	500	29	0	0	4.4	1.1	0.6
71600	12	V	500	30	0	0	4.9	2.2	1.6
72201	00	V	500	30	0	0	2.8	0.3	-0.3
72201	12	V	500	30	0	0	3.1	0.5	-0.2
72402	00	V	500	27	0	0	4.3	0.5	0.0
72402	12	V	500	29	0	0	5.0	0.2	0.0
74494	00	V	500	26	0	0	4.1	-0.8	-0.2
74494	12	V	500	26	0	0	5.0	-0.5	0.4
78016	12	V	500	28	0	0	4.5	-0.1	0.8

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45